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THE

AMERICAN JOURNAL

OF

DENTAL SCIENCE,

EDITED BY

F J S. GORGAS, M. D., D. D. S.
RICHARD GRADY, M. D., D. D. S.

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VOLUME XXXIII—THIRD SERIES.

BALTIMORE:
SNOWDEN & COWMAN MFG. CO.

LONDON:
TRUBNER & CO., PATERNOSTER ROW.

1900.

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THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, MAY, 1899. – 1900 NO. 1.

Selections.

ARTICLE I.

A FEW CONSIDERATIONS IN FILLING TEETH.

C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

APPROXIMAL CAVITIES IN BICUSPIDS AND MOLARS.

The principles involved in the treatment of caries occurring on the approximal surfaces of bicuspids are so similar to those occurring on like surfaces of molars that they will be considered as one class of cavities. Minor differences in the detail of the work will, it is true, be called for, but these are readily suggested by the differences in the forms of the teeth. The position and function of bicuspids and molars are nearly identical, and they are subject to practically the same influences leading to decay primarily and to a recurrence of decay around fillings. The same forces are at work to dislodge fillings, and the same general plan of anchorage must be pursued in the one as in the other. For these reasons they are treated in common.

SIMPLE APPROXIMAL CAVITIES NOT INVOLVING OTHER SURFACES.

The instances are very rare where it may be deemed advisable to fill this kind of a cavity. Usually when decay begins on the approximal surface of a bicuspid or molar, the proper preparation of the cavity involves its extension through to the occlusal surface. Almost the only exceptions relate to those cases where the cavity faces an open space caused by the loss of a tooth, or to those occasional instances where there has been extensive recession of the gums in the interproximal space and consequent decay in the cervical region. This latter usually occurs in advanced age, when such extensive cutting as would be necessary to involve the occlusal surface would not be justifiable, and where the open interproximal space admits of access from the buccal aspect. The farther rootwise the decay occurs the stronger the argument for filling without extending occlusally, on account of the better facility for approach and the greater thickness of the occlusal wall.

but in ordinary caries occurring near the contact point, and with the teeth standing in line one against the other, the rule should be to open the cavity to the occlusal surface. The reasons for this lie in the fact that in such cases access cannot be gained to do perfect work short of very extensive separation, and then when the teeth have been so separated and filled, and have fallen back to their original position, an element of danger to the filling remains on account of the margin of the filling being too near the contact point. The reason that decay begins in this locality in the first instance is because a certain area of the tooth-substance is left exposed to the action of micro-organisms, undisturbed by friction of the tongue, cheeks, the tooth-brush, or of food in the process of mastication. If the line between enamel and filling be left near the contact point, the same influences which induced the original decay may be expected to act on the enamel at the margin of the filling to bring about a recurrence. If the cavity is extended occlusally far enough to make a clean margin, the occlusal wall is thereby rendered too weak to withstand mastication. All operations performed upon these surfaces without extension must therefore be considered in the light of temporary work.

Some times such fillings do good service through the care with which they are inserted, coupled with the probable fact that just at this time the patient acquires a partial or complete immunity from caries. Many indifferent operations have received credit for being perfect owing to this very fact of immunity, and the whole question of periodical immunity and susceptibility of our patients in regard to the attack or progress of dental caries should receive more careful consideration than it does. But what concerns us now in treating the present subject is that clinical experience proves most of these small fillings to be temporary, and resort should be had to their occasional insertion with this fact clearly in mind.

The plan of anchorage for such fillings is very simple. There is little stress to dislodge the filling, and all that seems necessary in the formation of the cavity is to make parallel walls surrounding it at right angles with the axial wall, and to bevel the enamel margins.

PROXIMO-OCCLUSAL CAVITIES IN BICUSPIDS AND MOLARS.

Wherever decay has so invaded the approximal surface as to involve the occlusal surface, or wherever it is deemed necessary to open the cavity to the occlusal surface in those cases having this wall still remaining, a new class of conditions confront the operator. In view of the fact, as already intimated, that most approximal cavities in these teeth must be made to include the occlusal surface, it becomes necessary to study somewhat carefully the conditions governing the treatment of such cases.

The principal objects to be attained in the insertion of this kind of a filling are, first, to check the existing decay; second, to prevent, so far as possible, a recurrence of decay in the future; third, to securely anchor the filling against displacement from the stress of mastication; and, fourth, to so restore the original form of the tooth that it will be maintained in its proper relation with the other teeth and with the gum-tissue filling the interproximal space.

The first of these requirements may be met by simply removing the decay and inserting a filling with perfect margins; and this would seem to be the limit of attainment with many operators. A failure to recognize other necessities in the case is accountable for much of the disappointment following these operations, through the temporary nature of this kind of work.

The same general rules of extension for prevention applying to these cavites that were given for approximal cavities in the anterior teeth, except that in bicuspids and molars esthetic considerations do not so materially affect the case, and the rules may therefore be less frequently waived on this account. The usual points of recurrence of decay around these fillings are at the cervico-buccal and cervico-lingual angles of the cavity, though in cavities left very narrow bucco-lingually the entire buccal and lingual margins may become involved.

Another form of failure, where cavities are narrow in the region of the marginal ridge, relates to a fracture of the enamel at the proximo-occlusal angles. Enamel left in this form is easily broken down by the stress of mastication, causing a break between the filling and the margin.

The plan of anchorage for these fillings calls for careful consideration along the lines of the most approved mechanical principles, and with a due regard for the location of the filling and the probable stress to which it will be subjected in the process of mastication. The force of mastication varies greatly in different individuals, and the intelligent operator will take cognizance of this and govern his operations thereby.

In estimating the probable durability of a filling and the extent of anchorage required to maintain it in place, a careful study should be made of the markings of mastication in the mouth under treatment. The expression "markings of mastication" is coined for the purpose of directing attention to this form of study. Mastication leaves its marks plainly and indelibly upon the teeth and upon fillings placed in them, and these markings offer a good index for the observant operator to estimate the probable average force exerted in ordinary mastication in a given mouth. The use of the gnathodynamometer for the purpose of recording the stress of mastication, while very valuable for scientific study and for throwing much light on the possible force of mastication, is not considered to be the most reliable index to the force actually employed in the comminution of food. The greatest possible force that can be exerted in closing the jaws is often far removed from the actual force used in mastication in the same mouth, and is not invariably relative to it. For this reason, if we accept it as our sole guide for the extent of anchorage required for our fillings, we shall in some instances subject our patients to unnecessarily broad and painful cutting to accomplish an object which might have been attained by less heroic means. On the other hand, we may sometimes fall short of adequate anchorage in those cases where the gnathodynamometer gives a low record, but where the actual wear and tear on fillings in mastication is somewhat severe.

It is true we should aim in all cases to anchorage our fillings in such security that the greatest possible stress of which the jaws are capable will not dislodge them, but the conditions under which we are compelled to operate will not invariably permit it. The requisite bulk of tooth tissue is not always left for us by decay, and the sensibilities of our patient must also be considered. The same statement is true here which was used in connection with cutting cavities in anterior teeth, that we must jeopardize the nervous system of our patient to follow out some heroic theory. The fact of ignoring the patient in these matters by a blind pursuit of an ideal in the mind of the operator is accountable for much of the aversion experienced against the dental chair, and we must have a care not to discourage people against permitting dental service to be done for them by too great a degree of severity during the operation. This does not imply that we must be slipshod in our methods, or that we must at all times avoid giving pain. It is occasionally necessary to give pain, but the operator should carefully study his patient and limit the discomfort to a reasonable degree of tolerance. (This matter will be considered more in detail in a subsequent chapter on the treatment of sensitive dentin).

The markings of mastication relate to worn surfaces of enamel at points of occlusal contact which are evidently formed by mechanical wear instead of by erosion, to deep indentations in fillings made by repeated and vigorous thrusts of the opposing cusp, and occasionally to fractured and jagged enamel showing evidence of rough usage. If the operator will give a careful study to the condition of his patients' teeth and watch for these markings he will soon be able to tell quite accurately the probable degree of service which a given set of teeth are called upon to do at table, and it will often guide him in his methods of anchoring fillings.

The different plans of anchorage for these proximo-occlusal fillings in bicuspids and molars deserve careful consideration. The method almost universally employed in the past has been to cut a groove along the buccal and lingual walls of the cavity, and in some instances to groove the cervical wall. The limitations of this method relate to the insecurity of such anchorage against heavy stress, and to the danger of weakening the walls, particularly in those cases where the buccal and lingual outlines of the cavity are sufficiently extended for safety against recurrence of decay. Unless the grooves are very broad and deep—a condition disastrous to cavity walls—any tipping stress on such a filling will tend to lift it slightly away from the axial wall, leaving a leak along the filling at that point. Then, again, the occlusal aspect of this form of filling is ordinarily unsatisfactory. In bicuspids especially the filling encounters a fissure running mesio-distally between the cusps, and leaving at the junction of the filling and fissure a shoulder on the filling impossible of perfect finish, and an element of weakness in the probable recurrence of decay along the fissure. A fissure is invariably a defect in the tooth whereby two islands of calcification have failed to coalesce in its development, leaving a break in the continuity of the enamel at that point and a crevice for the ingress of deleterious matter. It should therefore be the constant rule that whenever a cavity on the occlusal surface of a tooth encounters a fissue, the fissue should be drilled out to its extreme end and included in the cavity.

What would appear to be a much preferable method of anchorage to that just considered, and one offering greater security to the filling, is to create a step on the occlusal surface of the tooth at right angles with the approximal portion of the cavity, and extending sufficiently into the occlusal surface to effectively lock the filling into place. This also results in the obliteration of the fissure and the formation of a filling easy of finish.

With this form of anchorage the filling can not be displaced short of a fracture of the filling or a stretching of the material at the point where the approximal portion joins the occlusal through repeated impacts of the opposing cusp in mastication. To prevent this the cavity should be made deep enough at this point to allow of sufficient bulk of filling-material for strength, and the material should be thoroughly packed and well condensed to give it the greatest degree of resisting power.

Another point in connection with the dislodgment of these fillings relates to the form of the filling on the occlusal surface, and also the form of the cusps on the opposing teeth. While the general rule holds good that in the formation of fillings they should be made as nearly as possible to reproduce the original form of the tooth, yet in these proximo-occlusal fillings a slight modification of the original form is often advisable. In the national form we find the marginal ridge of enamel standing more prominent than the enamel between the cusps, thereby receiving greater impact in the process of mastication. If in the insertion of the filling we reproduce the marginal ridge, we subject the filling to too great leverage at a point where it has a tendency to tip it away from its anchorages. This may be avoided by making the filling as high as possible midway between the cusps, and sloping it toward the contact point in such a way as to avoid making a marginal ridge and to present a gradual incline from the highest point between the cusps to the point of contact on the approximal surface. In doing this the occlusal surface of the filling is so presented to the cusp of the opposing tooth that the tendency on closure of the jaws is to force the filling laterally into the cavity instead of lifting it away, as would result if the marginal ridge were reproduced.

This plan does not materially impair the efficiency of the tooth for mastication, but even if it did lessen the masticating area somewhat it would still be justifiable on the ground that a tooth with its masticating area reduced one-half, but containing a filling safely anchored and enamel so sloped as to avoid fracture, is more valuable than one presenting a full masticating area subject to the danger of filling displacement and fractured enamel-walls. This does not imply that the filling should be made narrower mesio-distally at the contact point than the tooth originally was. For reasons which will appear later the full width of the tooth must be maintain wherever possible. This may result in some instances in the point of contact with the approximating tooth being carried slightly rootwise of the original contact, but if care is exercised this may safely be done without impairing the efficiency of the contact or interferring with the gum-tissue in the interproximal space.

The treatment of the cusps of opposing teeth coming against these fillings is a matter of much importance, particularly with bicuspids. When the sharp buccal cusp of a lower bicuspid impinges so far into a cavity on the opposing upper bicuspid as to necessitate making the filling too thin for strength, or where it passes so far between the cusps of the upper tooth as to form a wedge capable of splitting the tooth, the tip of the cusp on the lower bicuspid should be ground down so as to shorten it and present a broad surface to the upper tooth instead of a wedge shape. This will result in the formation of a thicker and stronger filling in the decayed tooth, and such a change in the direction of force exerted by the lower tooth as to minimize the danger of spliting its opponent. With a wedge-shaped cusp there is much lateral force exerted buccally and lingually against the cusps of the upper tooth, but with a broad, flattened cusp the direction of force is more nearly parallel with the long axis of the tooth and the tendency to split is lessened. This grinding, if done judiciouly, will not interfere with the usefulness nor impair the integrity of the lower bicuspid. The enamel is very thick at that point, and there is little liability to decay, so that this method should be employed quite frequently for the greater permanence of our fillings and the greater safety of the teeth, especially in those cases where the cusps of the lower teeth are very prominent and sharp.

One of the most important considerations in the management of these proximo-occlusal cavities relates to the form of the filling on the approximal surface. It should be so built out to a contour that the tooth will be maintained in its proper position in the arch, and that the gum-tissue in the interproximal space shall be protected and preserved in a healthy condition. When the teeth stand in their normal relation in the jaws they are supported on their approximal surfaces by contact with the tooth next in line, and the interproximal space between these points of contact and the border of the alveolar process is filled with gum-tissue. This gum-tissue has an arched form bucco-lingually, with the crest of the arch near the contact point; and this form facilitates the cleansing of the space by a deflection of the food buccally and lingually in mastication. So long as the contact points are small and the space of normal form and filled with gum-tissue, foreign material will not find a lodgement in the space. In the comminution of fibrous food, such as meat, the fibers may occasionally be forced between the contact points, but they are not retained there on account of the narrowness of contact. The succeeding excursion of food on closure of the jaws in passing buccally and lingually along the incline of gum will catch them and carry them with it, leaving the space clean.

When decay takes place on the approximal surface and the contact point breaks down, the teeth, lacking approximal support, have a tendency to drop together, forcing the gum from between them and narrowing the space. In cases of extensive caries the teeth may so change their position as to practically obliterate the space and crush out all of the gum tissue, leaving the buccal and lingual festoons of the gum more prominent than that portion midway between the teeth. This results in an inverted arch to the gum, and produces a pocket between the teeth which is especially favorable to the reception and retention of food debris. When caries occurs in this way the necessary procedure to restore the gum to health is to wedge the teeth apart to their original position, and then to so contour the filling that they will be maintained there.

If the filling is inserted without this precaution the result is a broad, flat approximal surface to the filling, which will catch fibers of food and retain them to decompose. This wedging of food between teeth is an element of great discomfort to the patient, and a prolific source of failure in these approximal fillings. It not only results in recurrence of decay, but sadly impairs the health of the gum and pericemental membrane. No operation should be considered satisfactory which does not include in its performance a due regard for the form of the interproximal space and the health of the gum-tissue within it.

The attempt to prevent food from wedging between teeth by making broad contacts built tightly against the approximating tooth usually fails in its object through the fact that contact can not in this way be made so perfect that at times the individual movement of the teeth one against the other will not result in the passage of fibrous food between them. When it once makes its way between the filling and the approximating tooth, it is firmly held there by the broad contact. The only safe form to give these fillings is to make a narrow rounded contact, sufficiently dense to maintain the teeth in position and to preserve its form against the wear occasioned by the individual movement of the teeth. This wear is sometimes quite severe, as is shown by the facets worn in the enamel on the approximal surfaces of many sound teeth. This recalls the fact that these worn facets are often a prolific source of discomfort to the patient, even where there is no decay; and in those cases where a filling is being built in a cavity approximating a tooth with an extensive facet, the margins of the facet should be slightly rounded off to produce an oval form to the surface. The attention of the operator should not be limited to the single tooth being filled, but he should study carefully the adjacent parts, to the end that the teeth and gums in the entire region be placed in the best possible condition.—*Dental Cosmos.*

ARTICLE II.

ON RESTORING CONSCIOUSNESS.

DR. BOWLES.

In all unconscious, comatose or syncopal conditions, however subtle or obscure the cause may be, whether from accident or from disease, whether from concussion or compression, whether from alcohol poisoning or from drugs, whether from suffocation or from drowning, or from any other cause, we have a condition of (in a physical sense) practical death of the body; a condition in which the patient cannot lift a finger to avert impending death, so that, if he is to be saved, it must be done with the help of those around him; he is now as much subject to the force of gravity as the dead bodies upon which we experimented in the post-mortem room, and if there are physical difficulties in the way interfering with respiration or circulation, they must at once be removed. Anesthesia is a condition essentially belonging to this category, but it is clinically often complicated by a mixed condition of syncope and apnea, and it is by no means easy to separate the one from the other.

It is clear that in the syncope of anesthesia the smallest interference with respiration is an instant danger; for to relieve lungs already surcharged with chloroform vapor we desire, in the first place, the expulsion of the noxious contents and to replace them with pure air. One's natural instinct is to fly to artificial respiration at once; but let us beware at such a moment of what a friend of mine calls "the vigor of fright."

In syncope the greatest care must be taken to avoid disturbance or pulling about of the body; if the ghost of a breath is being taken, wait and watch; a person nigh unto death wants very little air, metabolism is almost at a standstill, and as much air as the patient wants at that moment nature will supply. If we wish to prevent the extinction of dying embers, we do not violently disturb them by "poking the fire," or we dissipate heat, and so extinguish the spark that kept them alive. I have seen cases of illness in which it was certain that physical disturbance during syncops put the patient in imminent peril by calling on the heart for extra effort at a moment when that effort was impossible.—*British Medical Journal.*

ARTICLE III.

PORCELAIN INLAYS.

H. S. GUILFORD, D. D. S., PH. D., PHILADELPHIA.

The latest methods of making porcelain inlays, and undoubtedly the best and most promising one yet devised, is that of Dr. N. S. Jenkins, of Dresden, Saxony. It resembles previous methods in that it consists in making a metal matrix of the cavity, and into this fusing a porcelain body of proper shade and consistency; but it differs considerably from any other in many of its details.

Dr. Jenkins was led to experiment in the making of inlays by the desire of his patients to avoid the conspicuousness of gold, and by his failure to obtain satisfactory results by the methods previously employed. His experiments extended through several years, but in the end his efforts were drowned with success.

In making the matrix he used gold foil No. 30, having found that platinum lacked the same degree of adaptability that gold possessed, and he also found that gold heavier than No. 30 did not yield as good results.

In the matter of porcelain body he noticed that low-fusing bodies previously used were lacking in life-like color snd strength. Through experiment, and by consultation with those familiar with the making of porcelain ware, he at last hit upon a combination of ingredients which gave him the desired texture and appearance, and also fused at a considerable lower heat than gold. In addition to this his combination was subject to less shrinkage in cooling than any bodies previously used.

These combined improvements enabled him to prepare an inlay of any desired shade, and one that would so closely fit the cavity as to make it almost indistinguishable from the tooth in which it is placed.

For the fusing of the porcelain body, Dr. Jenkins has devised an oven, heated by a jet of gas and air.

The furnace is shaped like a muffle, about three by three by five inches, is made of Russia iron, and lined with asbestos cloth. The jet of gas and air is supplied by means of an ordinary gas blow-pipe, such as is used in the laboratory for soldering, and the air pressure is obtained from a foot-bellows. The furnace is supported on feet, and in its base is a hole, of an inch or less in diameter, through which the jet from the blow-pipe enters.

In making the gold matrix, the piece of foil is pressed to the shape of the cavity with cotton or spunk, held in a pair of blunt tweezers, and the margins of the cavity sharply outlined in the gold by burnishing it over the edges.

For holding the matrix during the baking, a platinum spoon is used, having a long handle and a hemispherical bowl about seven-eighths of an inch in diameter. In this is placed fine asbestos, mixed with water, and the matrix gently imbedded in it. Heating over a gas flame dries out the moisture, and the matrix is then ready for the porcelain.

Instead of mixing his body with water, as has heretofore been customary, Dr. Jenkins uses alcohol, on account of its more ready evaporation. Moistening the porcelain powder with alcohol on a glass slab, it is placed in the matrix and gently dried over a flame. The platinum spoon, with its matrix and body, is now inserted in the open mouth of the muffle and the flame applied by the blow-pipe. In a few minutes the porcelain is fused and allowed to cool. More porcelain is now added and the operation repeated.

In order to secure thorough fusing and make up for shrinkage, the porcelain is added and baked in two or three portions.

When completed, the foil matrix is stripped from the inlay, and the latter inserted into the cavity to see that all is satisfactory. Before placing the inlay permanently, the cavity will have to be enlarged inwardly, or roughened with a burr, and the inlay may also require to have a groove cut into its under portion with a delicate corundum wheel. If it has not been done previously, the rubber-dam should next be applied and the cavity thoroughly dried. Zinc phosphate of a light color is now mixed to creamy consistency, some of it applied to the margins of the cavity, and some to the under side of the inlay, and the latter quickly pressed into position. Pressure upon the inlay, to force it home and expel any excess of cement, can best be exerted with a piece of orange-wood.

After the cement has hardened and any surplus removed from the margins, the case is complete.

Dr. Jenkins has prepared his porcelain in a dozen or two different shades, so that, with these, or a combination of any two of them, any desired shade can be obtained. A large amount of skill and experience is necessary in order to obtain just the shade desired, and much patience is required to secure a thoroughly correct matrix. The foil must not move while it is being adapted to the cavity, and in removing it great care needs to be exercised not to change its form. So, also, in placing and imbedding the matrix in the asbestos in the platinum spoon, delicate manipulations is absolutely necessary.

Again, practice alone can impart the skill and good judgment necessary in placing the proper amount of body in the matrix, so that, when fused, the inlay will entirely fill, but not more than fill, the matrix. If two much body be placed in the matrix, the inlay will overlap the margins and prove a failure; whereas, if too little is used, the inlay will not entirely fill the cavity.

Dr. Jenkins thinks that his furnace should, in all cases, be used, in order to secure satisfactory results; but there seems to be no good reason why a Downie or Land furnace, or a Custer electric oven should not be employed with equally good results. The Jenkins furnace may be used anywhere that a gas supply may be obtained, and this fact will make it more generally useful to practitioners who cannot obtain the electric current. It also does its work very quickly, for with it the porcelain body can be fused in a few minutes. Fusing in an electric oven will take longer, which would prove an objection where it is desired to take and set the inlay at one sitting.

The zinc cement with which the inlay is secured in the cavity is, of course, perishable; but where there is a close adaptation of the inlay to the cavity, the line of cement exposed will be very fine, and, if dissolved out in time, can easily be replaced without removing the inlay.

Inlay work is most called for in the interior teeth, especially upon their labial and approximal surfaces. Farther back in the mouth it would possess no special advantage over the metals now generally employed. For the restoration of corners of teeth an inlay can hardly be made strong enough in its anchorage to resist the strain of mastication, unless the tooth be pulpless so that the cavity can be greatly enlarged inwardly.

The making and setting of an inlay will generally consume more time than the insertion of a gold filling, but experience will bring with it rapidity of manipulation as in all other processes.—*The Stomatologist.*

ARTICLE IV.

SOME NOTES ON THE MIXING OF AMALGAMS.

T. H. DODD, BARNARD CASTLE.

Strange it is, but wonderfully true, that we exercise "mighty care" in having our amalgams prepared with the purest materials—the mercury distilled and redistilled to chemically purify it. Yet all this trouble is undone by the mode in which we manipulate the mixing of the metallic filling with the mercury to form a paste. Consequently many decry and condemn the alloys or mercury as not possessing (though of standard quality) the virtues they anticipate; and condemn them as inferior in quality, having failed to obtain the good results they expected; whereas often the fault rests with the operator or mixer, he having overlooked the fact that he has unconsciously, by means of the sweaty hand and bare fingers, imparted impurities that must spoil what would otherwise be an ideal filling. In referring to a recent edition of a standard work on "The Methods of Filling Teeth," etc., the publication of which has a world wide fame, I find that work falls into the same error in recommending "the mixing" to be done in a mortar, "then transfered to the palm of the hand and kneaded with the finger to amalgamate." My experience has shown me that this and other general methods adopted, using the sweaty hand, must greatly interfere with and deteriorate the quality of the amalgam so mixed, for the moisture of the hand, together with the organic acid it contains, must and will combine with the metals and mercury, and the chemical action set up, acting upon the precious metals the filling is composed of, must greatly contaminate the amalgam, rendering it somewhat valueless for the object to be effected. No doubt this accounts for the black and lusterless appearance many fillings show after a few weeks' insertion.

Let me give an explanation of what I consider will take place in amalgams prepared in the way I have described. These may be classed under three heads.

First, we will take the moisture more or less developed by the exercise of the bare finger in the bare palm of the hand. As we know, some, more than others, perspire freely. This being so, in the mixing with alloy with mercury, moisture in itself is highly prejudicial in promoting mechanical action, and a combination of the metals with the mercury. It must, more or less, stay the amalgam, preventing or arresting the plastic condition so essential to form a perfect mass.

Then we must consider the composition of the perspiration and its constituents. As I have stated, one of its elements being organic acid, will, no doubt, in turn, chemically set upon and decompose the metals of the fillings used, and this in turn forms compound salts of the metals, another impurity.

Then we have the grease contained in the perspiration —a prominent extraneous substance which will more particularly act upon the mercury, forming, I presume, "oleate of mercury." This, in like turn, must retard and arrest the mechanical combination of the metal with the mercury, reducing their affinity for each other, (the alloy and mercury); forming another impurity. Consequently there is failure in obtaining a mass that should be plastic and undiminished in permanent luster.

I would here say, failing the hand, the mortor will be best to accomplish the object of mixing, and prevent any contamination, as I have described. But experience has shown me that the device of covering the naked palm of the hand with a sheet rubber glove and the finger used for mixing with a rubber finger stall, overcomes all contamination and difficulties, and since using this I have had excellent results, obtaining a more perfect kneading, a mass retaining its fine luster, and altogether producing an ideal filling in every sense of the word.

I at first tried leather and kid, but could not get such good results as with the rubber. Another advantage rubber possesses is that it can be readily washed and quickly dried, as it becomes tarnished and soiled in the mixing process—a consideration when care has to be exercised to avoid any dampness whatever in fillings.

The squeezing of the prepared mass through a piece of chamois leather into wafers to remove excess of mercury, and "Flagg's" process of inserting a wafer or a small portion at a time into the cavity, working such portion so as to bring out the mercury to the surface, is very essential to a successful stopping.

With these few hints I close, trusting they may be of some consideration and benefit to the profession.—*The Dentist.*

ARTICLE V.

ARSENIOUS TREATMENT FOR THE REMOVAL OF TUMORS FROM THE MOUTH.

DR. J. L. MEWBORN, MEMPHIS, TENN.

Read before the Tennessee Dental Association, Lookout Mountain, July, 1898.

CASE NO. I.

In 1876 Maggie H—— (eight years old) was brought to me by her father for the removal of two baby incisors below. On further examination I found all the upper baby teeth firmly in position, and located on the gum above the right canine and baby molars was a liver-colored tumor the size of a nickel; its surface was convex and as slick as glass, with margin as well defined as the setting of a watch crystal. After a few days the surface began to break up into a warty appearance with a tenacious yellow exudate from its surface. My proposition to remove the growth with arsenic was received with strenuous opposition by the half dozen leading physicians whom I had assembled for consultation. Holding my proposition in abeyance, I agreed to try any other remedy they might suggest. On the supposition that tardy replacement of the baby teeth might be an exciting cause, I agreed to and did extract the right central, lateral, canine, first and second molars —all baby teeth. This removed all restraint, and in a week the tumor had extended down and inward to the center of the roof of the mouth, becoming as large as a hickory nut. Next, the whole surface of the tumor was pierced in every direction with a pointed orange wood stick, being dipped in C. P., nitric acid before each puncture. This seemed to stimulate vascular action, and caused the whole surface to sprout out, giving it the appearance of a cauliflower. After the third day this treatment was abandoned. By this time three weeks had been wasted in delay and treatment, which had only stimulated its growth until now the lips could not cover it nor the teeth be brought together. The child was beginning to show and feel the lack of proper nourishment. The nasty thing was growing at a fearful rate. The father fully realized the exigency of the case when I assured him that heroic treatment could be no longer delayed. The surgeons had insisted that the knife and bond forceps were the last resort. I explained to the father that this meant chloroform, the loss of a great deal of blood, the destruction of bone and germs of teeth sufficient to disfigure the child for life, together with fever and possibly erysipelas for several weeks. "Now, shall we adopt this or my remedy, which is arsenic—a virulent poison?" To my gratification, he replied: "Doctor, I have watched you closely. I believe you know what you are about. If you say put arsenic in there, why slap it in, and I'll back you." In less than a minute the whole operation was done. After piercing the lobulated structure of the tumor to its center, I carried to this point on a forked instrument a small pellet of cotton saturated with twice the amount of arsenious paste used for destroying the nerve in a tooth, nothing more. In five days the whole thing sloughed away, leaving a clean hole down to the exposed crowns of the advancing permanent teeth. In three weeks this was filled with new tissue. No pain was inflicted, not a drop of blood lost, no reactionary fever supervened, and the child only stopped playing long enough to spit the thing out. Ten years afterwards, when she was eighteen years old, I made a cast of her mouth, which shows a perfect arch and complete denture.

CASE NO. 2.

A few years after this a negro woman reported that while having a lower tooth extracted the forceps suddenly flew up, striking the right upper central with great force. Soon afterwards a tumor began to grow from the injured pericementum, which continued to grow for a year. Several teeth had been removed to make room for it. When it came into my hands it had protruded from the alveolus directly to the front, and looked like an Irish potato sticking out between the lips. This was treated in similar manner, with good results.

CASE NO. 3.

The third case was that of an old market woman who reported with a firm knotty growth from the periosteum of the lower canine tooth. This projected against the lower lip, and was the size of a filbert. One application of arsenic, as in No. 1, made a permanent cure.

CASE NO. 4.

On the 11th day of May, last, Mrs. H——, of Ripley, Miss., came to me with a lobulated tumor, the size of one half of a walnut, growing from the pericementum of the upper right canine, which had been removed, hoping to arrest the growth. It was predunculated, as most of these tumors appear after taking on rapid growth. It was the 11th of May that I made the arsenical application, just as in Case No. 1. On the 14th I removed the blackened mass by manipulating it with a pair of foil pliers, bringing with it one or two long filaments, resembling roots, which penetrated deep into the still empty tooth socket. This patient returned home on the 16th, and, like the others, had no pain, no looss of blood, no destruction of healthy tissues, nor any subsequent effect which would give the least annoyance whatever.

In making this brief report of these four cases, I have purposely avoided all characteristic indications which would aid in any way to determine whether they should be classified as vascular, fleshy, glandular, fibrous, cartilaginous, osseous, or cystic tumors. These indications are not reliable, because they are not uniform in the different stages of development or growth of the tumor; therefore, they do not in every case indicate or determine the course of treatment. As the most reliable guide for the adoption of the arsenical treatment, I would lay down the following rule: On any growth or tumor, either sessile or pedunculated, which arises from the alveolar region of the upper or lower jaw—which has a distinct line of demarcation, and can be punctured to its center with a spear-pointed instrument—use the arsenic without hesitation. If there is no line of demarcation, but a general infiltrated appearance of all the surrounding parts send the patient to the surgeon with your compliments.

If the tumor cannot be penetrated with an exploring needle, it is cystic or osseous, and would require the gouge and burring engine to break it down. But, Mr. President, I am billed for a report of cases, and not a paper on tumors.—*The Dental Headlight.*

ARTICLE VI.

"TOOTHACHE."

D. D. ATKINSON, D. D. S.

People often ask how it is that a tooth can ache after the nerve has been killed; any so frequently is this inquiry that the inference must be that very many people are under the impression that all toothache has its seat in a nerve contained within the tooth, and that this being destroyed, ought to forever end the possibility of pain in that particular tooth. That this idea is entirely erroneous is apparent to every dentist, but that it does prevail, even among otherwise intelligent people, cannot be denied.

It is the purpose of this brief article to point out some of the causes of toothache in teeth which have either living or dead pulps.

Every tooth has in its center a natural cavity conforming in shade to the outlines of the crown thereof, with canals leading to the end of each root. In this cavity is contained a living pulp (if the tooth be impaired), commonly known as the nerve. It consists of blood-vessels and nerve-fibres, connected with the vascular system, and nerve-centers through a small aperture at the end of each root or fang.

Now, so long as this pulp is not disturbed by external interference, its functions will very likely be performed, and all will be well; but when decay attacks the tooth from the outside (and this is mentioned because it is the most frequent cause of toothache), and makes so much progress that this delicate pulp, which has heretofore been protected by its solid walls, is exposed to the irritating effect of outside agencies, it frequently becomes the seat of inflammation, characterized by intense pain, which by reflex action may be transmitted to other teeth, or may be confined to only the affected tooth. An application of the proper remedies will relieve the pain and, if desired, kill the nerve. This, for a period, will send the pain from the offending tooth, but if the pulp cavity and the canals along the roots are not properly treated and filled, a recurrence of pain will be almost sure to follow in a short time, but from a different cause.

In the living pulp the increased flow of blood pressing against the unyielding cavity wall had caused the pain. When the pulp has been devitalized, and left to decompose within the tooth, it becomes a seat of infection, charged with poisonous gases and micro-organisms. These will find their way along the root canal, and make an exit through the small opening at the end of the root, and be deposited at the apex of the bony socket which contains the roots of the tooth. Violent inflammation will immediately follow, growing more intense, unless relief is afforded, until it terminates in alveolar abscess, and is discharged in the form of pus somewhere, usually on the surface of the gum, all the time being characterized by intense soreness to the touch. A tooth which, having its "nerve" killed, has been properly disinfected and filled, nearly always enjoys immunity from the condition above described, because there is no place for the lodgment of micro-organisms. However, a tooth whose "nerve" is dead may remain for years inert, and yet might, upon some slight provocation, throw the patient into all the agonies of acute abscess. Without going further into the causes which lead to toothache, it is hoped this article has demonstrated how teeth whose "nerves" are killed can be the seat of that malady, as well as those whose "nerves" are intact.—*Information.*

ARTICLE VII.

REMOVABLE VS. FIXED BRIDGE WORK.

T. E. TURNER, D. D. S., ST. LOUIS, MO.

Read before the St. Louis Dental Society, Dec. 6, 1898.

This is an age of progress and dentistry in common with many other sciences has kept well to the front; this is particularly so of dentistry in that branch of prosthesis known as crown and bridge work, upon the advent of which it was hailed as the great desideration, the zenith in the replacement of lost dental organs was thought to have been reached; teeth without plates became a reality, and fad or hobby with many practitioners. Its limitations were not fully comprehended, its principles were not understood, still it was made to serve in all manner and conditions of cases; a few scattering roots or teeth sufficed for the replacement of a full denture.

No doubt enthusiasm for the new method led many conscientious practitioners to make grave errors of judgment as to its availability in many cases, while the unscrupulous make use of it in every case where the fee is forthcoming. Such practice must and is having its legitimate fruitage in the many failures we see to-day—and they are many—while the future promises to be still more prolific. Bridge work must be used with discrimination only after a thorough understanding of the conditions involved; the prognosis should be extremely favorable. But a reaction has begun, and bridge work is held in disfavor with many practitioners, while others condemn it entirely. Thoughtful conservative dentists are coming more and more to realize that this method has only a limited scope, which cannot be exceeded without limiting the duration of the work, and are using it less and less.

Such is the usual history of all things new; new methods, new appliances, etc., are introduced as panaceas for all failures and diseases; great things are promised, great results expected; they are greeted with enthusiasm; many forgetting to "hold fast to that which is proven," forsake the tried and known for the untried and unknown, after being tried they eventually fall into their proper sphere and are recognized as valuable additions to their respective departments, in case they prove to be so.

Bridge work thus in time will take its proper place as a method for the replacement of lost teeth; its limitations will be more fully understood and respected (by reputable practitioners at least); a few scattered teeth or roots will no longer be used to carry a full denture, it being contrary to true mechanical principle; nor will teeth affected with pyorrhœa be used as abutments, but in its proper sphere will be recognized as a legitimate operation, and the best method yet devised for the purpose for which it was intended, provided it be skillfully constructed in accordance with true mechanical principles; and yet, however skillfully constructed or properly placed, the result falls far short of the ideal. Certain defects are inherent in fixed bridge work, and cannot be eliminated, however well the piece may be constructed; it may conform to true mechanical principles, be correct from an æsthetic point of view and be within its proper sphere, yet it is a failure in some measure, for in the very nature of things it cannot fulfill all the requirements of an ideal bridge. In the above reference to bridge work, the ordinary is meant; one continuous piece terminating with a crown at each end, the fixed or immovable bridge.

Some of the most prominent defects of this class of work are these: First. The difficulty of making repairs. When it becomes necessary to replace a broken facing, the result is usually unsatisfactory, if attempted while the piece is in position. If the bridge is to be taken off, the crown must be cut open, bent and twisted out of shape. In many cases they are utterly ruined, as far as fitting again is concerned, but are generally patched and used again. This is often made necessary by the fact that a sufficient fee cannot be commanded, except in few instances, which would justify the dentist in making a new crown for the abutements, besides replacing the broken facing; he, therefore, does not feel called upon to do more than is absolutely necessary. If it becomes necessary to repeat this operation a second or third time, the condition of the crown may be easily imagined. They will be composed in most part of solder, and are rigid, unyielding and ill fitting, but still made to do service.

I am sure this very thing accounts for many of the poorly fitting, disreputable looking bridges we often see. We judge them in their present condition, forgetting that possibly they may have got in such condition through a series of repairs. And then some bridges have a faculty of getting loose at one end only, then it becomes necessary to sacrifice the crown that has proven true.

Second. The so-called self-cleaning space is a misnomer, a delusion, and a most convenient place for the lodgment of food. It is almost, if not impossible to keep them clean. It may be possible, but I have yet to see one kept so. I think a bridge with these spaces is not so cleanly as a saddle bridge, but it possesses this advantage —you can look under it and see what is there. In some cases these self-cleaning spaces interfere very seriously with speech and are a great annoyance to the tongue, while for all the vile odors imaginable I have never found the equal of a recently extracted fixed bridge.

Third. In many cases the teeth to be used as abutments diverge from the parallel, necessitating no undue amounr of grinding or a stretching and straining of the piece until the fit of the bands is destroyed.

Fourth. The fixed bridge as usually constructed fails to restore the full contour of the lost tissues; this, of course, would not apply to saddle bridges, as the objections under the first three do.

That the fixed bridge does not fully meet the requirements is demonstrated by the continual striving for something better, in the various forms of removable pieces that are suggested and introduced from time to time, thus overcoming in most cases and in great part the objections to the immovable work.

The ideal bridge must belong to the removable class, as it alone can possess all the requisites necessarily inherent in an ideal bridge, and must conform to the following requirements: The lost tissues, teeth, gums and process must be exactly restored, it must not be too complicated of construction (which is a serious objection with some system); must be easily removed and replaced by the wearer and yet must be perfectly rigid and immovable when in position; the teeth that are supplied should be attached to a small plate or saddle resting firmly on the gums, thus relieving the piers of any undue strain or pressure, they being used principally to hold the bridge in position. A bridge filling the above requirements can be easily repaired and can be kept clean, the two most essential requirements.

It is not intended to condemn fixed bridge work in toto, for I am sure that in many cases it would be indicated in preference to removable work, in the present state of developments of the removable systems; but my desire is to call your attention to the limitations and possibilities of each system, so that with these well in mind we may at least form a correct opinion, as the cases are presented to us. It must be admitted that fixed or immovable bridge work has attained its highest perfection, and any further progress must of necessity be along the line of removable work.

Bridge work should only be inserted after thorough study of the case in hand, the conditions to be met should be fully appreciated, discrimination should be made between the fixed and removable systems, with the difficulties to be overcome and the mechanical principles involved well in mind; it is well also, in this connection. to keep in mind the fact that partial gold plates, made stable if necessary with clasps on gold crowns, are indicated in many cases instead of either form of bridge work.

There is probably less objection to fixed bridge work in the incisor region than in the molar and bicuspid, because the contour of the lost teeth is more nearly restored, it is possible to keep them cleaner, and facings can be more easily replaced while the piece is in the outh.

In this connection a brief mention of some of the crowns and attachments used in removable work would probably not be amiss. Probably the best crown for the six anterior teeth is the Richmond removable crown with a split pin, by which the crown can be made tight again if it should become loose. If this crown is properly made, great care being given to the minute details, I am sure it will do all that is expected of it, being easily removed, yet perfectly rigid when in place. For the molars and bicuspids, the telescoping crowns are among the best forms. They must be accurately made, and the crown should be of some length, not too short.

One of the most admirable systems yet devised is described by Dr. Rhein in the *Cosmos* for February, 1894. This overcomes every objection that can be made to fixed bridge work. Mutilation of the teeth is reduced to the minimum, it being only necessary to shorten the articulating surfaces, split crowns being used if the sides are not parallel, the edges being drawn together after the crown is in place, which requires a high degree of skill, as do also the other numerous details of the system, to accomplish the desired result, together with an infinite amount of patience and time, and a good fee in view—a combination rarely met with.

Various forms of clasps are also used as a means of holding in position removable bridge work. These pieces border very closely on plate work, in fact, may be said to be the connecting link between the true bridge and the plate, but are probably of doubtful value.

I have also used the Condit attachments in several cases. In one, two bicuspids were supplied, being attached with rubber to a small gold plate or saddle, which rested on the bridge, crowns being placed on the cuspid and molar, with the Condit attachments soldered on; but I am awaiting developments before using them further.

While all these methods are useful and valuable in many cases, I cannot but believe that the future has in store something better—system that will be easily constructed, durable, positive and universal.—*Dental Review.*

ARTICLE VIII.

DENTISTS IN THE ARMY.

GEO. W. GRISWOLD, D. D. S.

The subject is one that has been discussed at some length by the dental brethren, and I will not attempt any long-winded argument in regard to it; but from my recent experience in the volunteer forces of the United States I might possibly be able to give some information on the subject.

The soldier's life is one that requires a sound body, a sound mind, and a sound set of teeth, and the average soldier is, I believe, desirous of taking good care of his teeth, for he realizes their importance, when it comes to masticating Uncle Sam's hard-tack, salt pork, bacon, etc. But how is he going to take good care of them? On the salary he is getting he cannot afford "dentists' bills," and if he could, he is only allowed to leave camp or garrison at long intervals, and feels that his leave is too previous to be spent in a dentist's chair.

The result is that his teeth are neglected and decay progresses until some fine day when blissfully eating his rations a piece of hard-tack gets into a cavity, crushes through to the nerve, causing him to jump four feet in the air, and yelling like a Comanche Indian, rushes off to the regimental surgeon, who seats him on a camp stool, calmly surveys the offending member, get two or three grinning hospital stewards to hold the victim, while he produces a pair of antiquated "archaic" weapons that some dealer in surgical instruments has palmed off on him as a universal forcep, grabs the tooth, and, placing his knee on the patient's chest to give him a purchase, gives a long, steady, straight pull that would not bring the tooth in a hundred years, and smash she goes. The result is that the next time that particular man or his tentmates have toothache they prefer to stick it out rather than be butchered, and consequently are unfit for duty.

How much better it would be if every regiment had its dentist, a man who has been in continuous practice long enough to have passed the "smart aleck" stage. Such a man, with a capable assistant, could by frequent inspections and a strict attention to business help wonderfully from a physical standpoint to improve the army and naval service of the United States.—*Dental Review.*

ARTICLE IX.

PYORRHŒA ALVEOLARIS.—PERSONAL EXPERIENCE IN TREATMENT.

W. G. BEERS, L. D. S., D. S., MONTREAL.

Read before the Maritime Dental Association, Sept. 1898.

What we positively know about the pathology of pyorrhœa alveolaris might cover half a sheet of note paper. What we positively do not know would fill folios. Our investigations are like a deep dive into a dark sea, knowing nothing of the bottom, and uncertain of rescue; and while the regulation "twenty minutes" ought to suffice to tell all I know of my own experience in treatment, it would take hours to relate explorations in the realms of pathological speculation, and the many discoveries made of one's own etiological ignorance. We make a step towards knowledge when we discover and confess our ignorance, and perhaps one's frankness in this direction may be a little inspired by the feeling that his friends are in the same plight. Somebody said that while caries is the most prevalent disease in existence, there are more teeth lost by pyorrhœa alveolaris; but we have no statistical proof that this is true; and I am disposed to accept it as one of those hasty and epigrammatic statements, which pass too current entirely because of their catching phraseology. We cannot assume that all teeth that are "lost" are lost legitimately. There are more legitimate deaths than births. It is quite safe to suggest that thousands of teeth are "lost" by ignorance on the part of the patient or malpractice on the part of the dentist. It needs no extensive experience to assert, that the large proportion of "lost" teeth in the establishment of the quack dentist are like lost souls that have none but themselves to blame for their damnation.

We need no statistical proof to declare that the disease which attack the soft and adjacent structures of the mouth, especially those intimately connected with the alveoli, are more difficult to treat, and more likely to recur, than those which attack the teeth themselves. The force of resistance (*vie medicatrix naturæ*) aid the soft structure; it is entirely absent in the hard, unless in the very exceptional and limited cases of arrested caries. Yet there is a limit to the tolerance which the soft structures exhibit, and when that limit is passed we observe irretrievable recession of gum, alveolar margins, entire destruction of the sockets and pericementum. There are a hundred questions which might be referred to, but however we may speculate on the etiology of this disease, I venture to express my belief, that if we take care of the gingival line, where the enamel and cementum join, or, in brief, of the gum tissue they would have no pyogenic bacteria in their mouths.

The etiology of caries is no longer a speculation; that of pyorrhœa alveolaris is entire so. We know that it is a perversion of normal phpsiological action; that it is a deviation from the normal standard of health of the parts concerned, constituting a distinct disease that may end in the death and loss of the teeth. But we are not agreed as to whether or not it is infectious, local, constitutional, or both. It is a much named disease; whether it be called Riggs' Pyorrhœa, Alveolaris, Suppurative Inflammation, Phegedenic, Pericementitis. Is it due to salivary or sanguinary calculus, or both, or fungi, or bacteria ? Is it a local expression of a systemic condition, and located in the mouth because of a predisposition of the gums, the pericementum and the alveoli ? Is it a primary or secondary lesion ? Is it never present, excepting in a depraved state of the nervous system ? Is it associated with gout, rheumatism, Bright's disease, locomotor ataxia, uterine troubles; and other constitutional complications, the excessive use of salt, or alcohol, which causes increased secretion of uric acid ? Is the calculus uric acid ? Is it connected with catarrh of the mucus membrane of the nose or pharynx, rachitis, tuberculosis, scorbutis, scrofula, chronic constipation, exanthematous diseases, malaria, diabetes, tabes dorsalis, dyspepsia, syphilis, anæmia, chlorosis, repeated pregnancy, bad air, bad food, hygienic neglect ? Or will some Boston prophet arise, who will tell us that it and all other oral troubles are due to the presence of amalgam, as in the middle ages, earthquakes, tempests and epidemics were ascribed to the devil or the Jews. With all this bewilderment in etiology, how can our treatment be based upon anything better than empiricism ? If the etiology is obscure, how can treatment be scientific ? We must just console ourselves by feeling our way in the dark, and taking the consequences until some one lets in the light. Someway of treatment where the disease has all the pathogmonic characteristics; but, to be as brief as possible, let me suggest a few aphorisms. Keep the mouth and your hands and whatsoever you see perfectly aseptic. Whatever drugs you use be sure they are pure. You must needs work a good deal in the dark, but get all the light possible both in diagnosis and in operating. A drug that is useful may be abused by over-use so as to become a positive irritant. Iodine and aconite in the incipient stage of inflammation will retard the circulation and stimulate lymphatic action, but used to excess, as it commonly is, it is a destructive poison. Alkalies in any form should not be used, either by the patient or the operator, because they percipitate the salts of common tartars. In secondary treatment; and in fact, all through, be careful not to disturb granulations which you have been trying to produce. Do not operate oftener, as a risk than three days of each week; some rest is as necessary as some operating.

Before beginning the removal of serumal calculus, be as sure as possible just where it lies. There may not be any. I have seen acid conditions in pregnancy, etc., when salivary calculus for the time is dissolved and disappears. As to whether or not this occurs where the calculus is serumal, I do not know. Massage the gum with the finger to make it bleed, if it will; sometimes lance; sometimes use a leech. Relieve venous congestion as much as possible before scaling. There is an object in manipulating the gum margins so as not to wound them any more than they are already wounded. I begin my diagnosis for the nodules of calculus by explorers I have made for the purpose, using a diagram of the roots to mark the parts upon which it is deposited. My pocket hoes and scrapers I have made so as to adopt them as nearly as possible to the contour of the roots. Square hoes and scrapers are not the best. I have had these made in duplicate of platinum-iridium so as to use them when the sulphuric acid is injected into the pockets. Some hydrogen, etc., and as I wish to leave room for somebody else to say something, I will say no more.—*Dominion Dental Journal.*

ARTICLE X.

SILVER NITRATE IN THE TREATMENT OF PULPLESS TEETH.

DR. L. G. NOEL.

For some months past the writer has been experimenting with this drug in the treatment of pulpless teeth, and the results have been so satisfactory that he feels it his duty to lay the matter before the profession. It may be that others are using this means of sterilizing pulp chambers and canals, but so far he has heard nothing of the practice. He writes this, believing it to be the best method for the molar teeth that he has used, and he has tried almost all the remedies that have been suggested for this purpose. It can not be denied that good results may be obtained with many other agents, but it is doubtful if absolute disinfection and sterilization of the dentin can be so quickly obtained with any other drug as with the silver nitrate. Its solubility makes it more penetrating than anything else that has been exploited in this practice; but this quality and its blackening effects upon the teeth, will almost limit its employment to the molars. True it may be used in the treatment of lower bicuspids, and in many places where discoloration has already occurred as a result of chemical changes in pulp tissue, and where it is not deemed especially objectionable its application may be extended to other teeth. Now a word as to the method of applying it. Having cleansed the pulp canals of septic matter as thoroughly as possible, and removed as much of the softened and aseptic dentin from the wall of the pulp-canals as can be taken away with impunity, and having allayed all peridental inflammation to the point of toleration of slight percussion, we put on the rubber dam, and after washing out all other medicaments, we apply the silver nitrate as follows: Having obtained from the druggist a short, wide-mouthed bottle of blue or green glass, containing the finely pulverized crystals, we take a smooth platinoid probe (a gold probe would probably be better, but good results may be had with steel or platinoid), and, wrapping a fiber of cotton loosely around the point of the probe, it is first dipped into water, then into powdered nitrate, and carried as far into the canal as it will go. The probe may then be withdrawn, leaving the cotton fiber with its charge of silver nitrate behind.

The probe is now used as a plugger, and the cotton pushed as far into the canal as it will go. This process is repeated until the canals are packed as full as they can be, then a pledget of cotton is moistened and rolled in the powdered nitrate and pushed into the pulp-chamber. The cavity of entrance may be closed with some temporary stopping, and the case dismissed for a week or two.

Upon the return of the patient, the whole may be reremoved and the roots filled. Such is the solubility and penetrating power of this agent that we believe it will filter through the dentin and render aseptic any portions of the roots traversed by canals so tortuous or flattened as to elude cleansing instruments of operator. Our faith goes farther. We believe that the cotton (if raw cotton) might be left in the canals with such a charge of silver nitrate, and the permanent filling introduced over it, with as good result as can be obtained by other methods of root-filling. We are not yet prepared to adopt this as a practice, not to recommend it to others, but we have been trying it in cases where it has been impossible to obtain that degree of dryness necessary to make a good root-filling of gutta-percha or oxychlorid of zinc, and so far the results have been very gratifying. In many of the buccal roots of the superior molars, where nothing but a mere fiber of cotton can be placed, we would say saturate this fiber with silver nitrate and leave it, using oxychlorid of zinc, or some more solid filling-material for permanent filling of the palatine canal. Perhaps the most gratifying results that we have yet obtained have been in the treatment of pulpless deciduous teeth. Our method of procedure has been as follows: After opening the pulp chamber and allaying the soreness by the use of dressings of old wood creosote, we fill the pulp-chamber about half full of cotton, moistened and rolled in pulverized silver nitrate. A temporary stopping is placed over this, and it is left for ten days. Upon the return of the patient the dressing is removed, the carious dentin is excavated from the crown of the tooth, and, after syringing out carefully with pasteurine, and bathing it with creosote, the whole cavity is filled with copper amalgam, without any effort at cleansing and filling the pulp-canals. We have not had to tap a single case to relieve alveolar abscess where the above treatment has been used; however, it is a comparatively new practice, and we admit that a few short months is insufficient to establish it. The roots of these deciduous molars being usually greatly wasted by the process of resorption, and the canals always difficult to broach, no one has had much success in cleansing and filling them; therefore we believe all will hail with delight a method that gives success without these baffling efforts. That eminent writer, Dr. Safford G. Perry, has recommended merely cleansing and disinfecting the pulp-chambers; then, if trouble arises after filling, tapping the roots to give exit to gas.

Who has not felt that the boring of a tape-hole was a clumsy way to relieve a very regretable septic condition? Our silver nitrate cases (and we have thus treated quite a number) have so far exhibited no symptoms of septic trouble. Not the least recommendation for the above practice is the ease and speed with which it may be executed. For the copper amalgam filling, we will say that its greatest value is for the deciduous teeth, and in these cases tt is especially indicated.—*Dental Headlight.*

ARTICLE XI.

OPPORTUNITIES FOR SUCCESS.

J. H. GRANT, D. D. S., PALESTINE, TEXAS.

It has been truly said that "The world pushes a professional man the way his intelligent accomplishments and inclinations wish him to go." If he is ambitious and wants to go up it pushes him up—if going down, it pushes him down, gravitation; however, making the speed greater on the decline.

A successful life has its moments of strength and bloom, its bright moments of inspiration, in which the human artist, the painter of human life, seizes on and utters what is purest, most beautiful and divine. If, in our human life, we acted only then, if then all sacrifices were made, all victories won, there would be but little difficulty in making not only our human life but our professional life a complete success. When at our best we but fill our alloted space as a special mission. It might be said that each of us in our professional sphere is a bottle on the shelf of time on which is placed a special label, for a particular position, and by it we steadily and regularly, even though sometimes struggling against it ourselves, or though struggled against by others, either fall or stand in our appropriate places. Men of real merit will, if they persevere, at last reach the station to which they are entitled, and pretenders, intruders and quacks will be ejected with contempt and derision. I feel that it is no small evil that the avenues to professional fame should be blocked up by a swarm of noisy, pushing, elbowing set of pretenders with no other accomplishments than cheek and a mania for outdoor advertising, and who cannot make good their entrance, but sadly hinder in the meantime those who have a right to enter. Those who have pride and who, by their application and hard study, acquire accomplishments and who will not disgrace themselves by joining in the unseemly scuffle, must expect to feel at first as if hustled and shouldered back, while some men of talents, accordingly, turn away in dejection from pursuits in which success appears to bear no proportion to deserts. But there are some who have sufficient confidence in their own powers and sufficient elevation of mind to wait with serene and contemptous patience, while quack after quack presses before them.

It is the conscientious man that struggles most at the beginning of his professional career, but will have less anxiety on the home stretch. Environments often place men in hard luck, but never fear disadvantages; a clear conscience, backed up by good discipline and a determined persistency, will overcome these appearing obstacles and clear the way to honor and respect (though seemingly) over a rough way.

Be a man, mind your own business and you will forge ahead and then your attention will be less attracted by the side-shows that often perform in your town, and gradually competition will be less—your field will be clear, your position and reputation well established and your success assured.—*Texas Dental Journal.*

ARTICEL XII.

SURGICAL HINTS.

Do not cough or sneeze over the operative field.

Children are more easily affected than adults by carbolic acid. Avoid its use in the young, as a number of cases of hematuria have resulted in them from the employment of wet dressings.

When strapping a chest for fractured ribe, it sometimes occurs that, instead of affording relief, the pain is increased by the strapping. This is usually due to turning a broken end inward. In any case the dressing is to be removed, and the patient must simply be kept as quiet as possible.

In some old men, chronic hemorrhoids are often due to straining in emptying the bladder, owing to enlarged prostate. In such cases it is better to advise the regular use of the catheter, even though the patient is able to thoroughly empty his bladder. The relief from straining commonly causes the piles to disappear.

When a patient first uses crutches, see that the arm pieces are thoroughly padded if any exclusive use of the crutches is expected. Paralysis, due to pressure on the nerves, is not uncommon. The musculospiral is most frequently involved, giving wrist-drop. The ulnar is also sometimes injured, but any or all of the nerves may be affected.

In the presence of any joint affection, the first object of treatment should be to obtain complete rest. The next one is to secure such position that, should ankylosis take place, the limb will be most advantageously placed. In inflammatory affections, especially in children, anæsthesia may be needed to obtain the position required.

There are certain regions, in which permanent cure after removal for cancer occurs rather rarely. It frequently happens, however, that death from recurrence is less painful than death from the primary affection. This is noticeably so in case of the tongue, and should be considered among the indications for operation.

In non-penetrating wounds of the abdomen, we may have considerable bleeding from the injury to the circumflex iliac, internal mammary and epigastric arteries. If the wound be penetrating, remember that the same cause of hemorrhage may be at fault. Such superficial hemorrhage should be looked for and checked, but no probing can be allowed. Non-penetrating wounds may, of course, be infected, and give rise to serious sepsis, with typhoid symptoms, etc. They are to be treated as anywhere else.—*Internat. Jour. Surgery.*

ARTICLE XIII.

THE INFLUENCE OF PREGNANCY ON THE CARIES OF THE TEETH.

DR. S. BIRD.

In a number of tables the author records the results of his careful examinations. The teeth of 200 mothers, being premi secundi and multiparæ, of an average age of 18.8 years, were examined and for comparison the caries frequency of 100 multiparæ of an average age of 17.3 was noted, giving the figures of the following table:

	AGE.	CARIES.
Mothers, -	18.8	17.9 present.
Non-mothers, -	17.3	16.22 "

By comparing the various tables, the writer concludes that: The caries of mothers is not more frequent than that of non-mothers. The tables further show that there is no increase in the number of carious teeth with the increase of the number of child-births and consequently no influence of pregnancy upon the frequency of caries. And further: In accordance with the comparative results obtained he denies any direct communication between gravity and caries. Pregnant women suffer occasionally from neuralgia of the teeth and gingivitis. The increased acid condition may cause unpleasant effects, but probably the constant hyperæmia of the breath in gravity and in consequence thereof in the pulps of the teeth may bring about the various forms of toothache, more so if there be caries or chronic pulpitis present. Till now the theory has been favored that during pregnancy the teeth lose a large amount of their calcium salts to help in building up the osseous system of the fœtus, and are, therefore, more easily subjected to caries. This theory is absolute and fallacious. If the organism should be in need of a larger amount of lime-salts, the food-stuffs will satisfy this want by an increased assimilation of calcium. Even the poorest food contains more lime than mother and fœtus need. Resorption goes hand in hand with inflammatory symptoms. These might be produced in bone but never in tooth-substance. Furthermore, Williams has shown that formed enamel is not subjected to metabolic changes, and Black's investigations show that the teeth of mothers who have born several times are not any poorer in lime-salts than those of other people.—"Vierteliahresschrift fur Zahnheiikunde."

Monthly Summary.

BROKE A TOOTH AND BLED TO DEATH.—William Oswald Billups, the thirteen year old grandson of Major W. J. Houston, of Decatur, died yesterday morning. His death was the result of breaking one of his upper jaw teeth while eating dinner, Thursday, and from the trivial hurt he bled to death.

The case has few parallels in the annals of medicine, albeit enough instances of the sort have been recorded by physicians to establish beyond all doubt that deaths have been similarly caused before.

Billups belonged to a class of physical idiocrats popularly known as "bleeders"—a person, as the word implies, affected with a predisposition to bleed. That blood lacks the peculiar property that causes coagulation. Hence, the slightest wounds are dangerous to their lives, for once a flow of blood is started, to check it is almost impossible.

That the boy belonged to this class; his mother, Mrs. Robert R. Billups, and his grandfather, Major Houston, were aware. Some years ago a brother of his sustained a slight cut on the index finger, and the only way in which the resulting loss of the vital fluid could be stopped was by the use of a turniquet. They therefore supposed that the other son was similarly affected.

When a few weeks ago he began shedding his milk teeth, and developing the permanent set. he was cautioned not to pull any of the old ones out, no matter how loose they became —the idea being to let the new comers gradually and bloodlessly usurp the places of the old. He obeyed this injunction rigidly, and all went well until Thursday. On that day, however, while eating dinner he broke out one of the loosened old teeth. A great flow of blood instantly ensued, and never ceased until death claimed him.

At first various home remedies were resorted to to stop the bleeding. These all failing, physicians were summoned—Drs. Goss and Ramsey, of Decatur, and Dr. Elkin, of Atlanta. Their efforts, too, were fruitless.

Last Thursday aftnrnoon the boy's entire gum dropped out. This horrible complication increased the effected surface many times, and therefore enormously increased the flow of blood. Death began to approach rapidly, then, and yesterday morning at one o'clock the victim breathed his last.

The boy's life-blood did not, as in ordinary cases, spurt out in a jet or stream. Instead, It oozed out slowly, but with unconquerable steadiness. And so completely drained was his system, that after death his body was as white as Italian marble.

Young Billups was the son of the late R. R. Billups, who died about three years ago, and who was for a number of years before his demise, in the railway service, and well known not only in Atlanta, but throughout this section of the State. His mother is the daughter of Major W. R. Houston, of Decatur, one of DeKalb's most prominent citizens.—Atlanta Constitution, January 21st, 1899.

FATALITIES FROM ANESTHETICS.—It is with great difficulty that figures relative to mortalities from anesthetics are obtained, because neither the local nor general government makes any effort to especially chronicle the deaths from anesthetics, and in many instances death is attributed to some other cause. Dr. Ernest Hankel, in his recent book, "Handbuch Der Inhalation Anesthetics," states that he has made a very careful investigation into the merits of the several sleep producing agents, and his research yields the following statistics :

Pental in 213 cases, one death.
Chloroform in 2,039 cases, one death.
Ether in 5,090 cases, one death.
Ethyl Bromyd in 5,228 cases, one death.
Nitrous oxid in 500,000 cases, one death.

—*Pacific Medico Dental Gazette.*

PYORRHŒA ALVEOLARIS TREATMENT.—My treatment in all cases of pyorrhœa is the same, and with it I have never failed in effecting a speedy and permanent cure in the most difficult cases. I begin by extracting all the tartar from the necks and fangs of the teeth; wash out thoroughly with warm water all around the teeth. Give the patient a mouth wash, such as a 50 per cent. solution of listerine, or 50 per cent. euthymol. I then prescribe Lithia tablets to be taken three times daily in a tumbler full of water; with instructions to patient not to eat rich food, especially avoid fat meats. I urge my patient to be prompt and call every other day, at which time I syringe out around the teeth thoroughly with euthymol. The lythia eliminates the uric acid from the system and renovates the kidneys, accompanied with the wash, the mouth soon heals and becomes once more in a state of health.—R. L. Ready, in *Dental Century*.

A RUBBER SUBSTITUTE FROM CORN.—We have received a sample of a rubber substitute made from corn. It is made from the oil derived from corn, and by vulcanizing it in connection with an equal quantity of crude India rubber, a substitute is produced; which, for certain purposes, is equal to the best gum rubber at a greatly lessened cost. The new corn rubber is claimed to possess all the essential qualities of Para rubber, including resiliency, and the discovery has been hailed with delight in the corn-growing states of the West. The manufacturers claim that the fact that corn oil does not oxidize readily makes this product of great value, since it is not affected by oxidation, so that product manufactured from it will always remain pliable and do not crack, as those made from other substitutes. This interesting substitute for rubber is very dark brown, or black, and it easily rubs off in light brown rolls. It is at present sold as low as six cents a pound. It is manufactured by the Glucose Sugar Refining Company, of Chicago, Ill.—*Scientific American.*

SENSITIVE DENTINE.—Dr. C. B. Rohland, of Illinois, says: "By adding just sufficient carbolic crystals to cocain hydrochlorate, and rubbing together with a spatula until the cocain is dissolved, a thick syrup is obtained, which is escharotic, antiseptic, obtundent. With this he often obtains most gratifying results in the treatment of sensitive dentine in cavities of decay. It should be used with the rubber-dam, dryness to the verge of disiccation secured, applied warm, and treated in situ with the hot.air syringe, so hot as can be borne, and again dried before excavating. If one application fails to give the desired result, two almost invariably will be effective."—*Dental Brief.*

EUCAINE.—Eucaine provokes hyperemia at the point of application, and should be used with caution when hemorrhage is to be feared. Five minims of a ten per cent. solution are sufficient to inject into the gum for the painless extraction of eeth.—Wolff, *Dental Digest.*

REPAIRING A GOLD CROWN.—Just suppose you have made a gold crown, and in finishing you go through the shell making an unsightly hole. If you undertake to solder this the chances are that you will have three or four holes caused by the solder melting out at the joints. To prevent this trouble, paint the crown all over the outside with whiting mixed thin except around the hole which you wish to repair, fill this with a plug made from gold foil, touch it up with a drop of borax water, and put a bit of gold solder inside, heat it with blowpipe and success will be the result.—E. A. Randall, *Dominion Dental Journal.*

SMOKERS' TEETH.—It has been found that the teeth of smokers are less liable to decay than those of non-smokers, and it has been found by scientific research that leptothrix buccalis and the other germs found in the mouth are rendered innocuous by tobacco smoke, and it is an established fact that it also entirely destroys or retards the development of the bacillus of cholera, of anthax, and of pneumonia.—*Weekly Dentist.*

WHERE PYROZONE IS EFFECTIVE.—A little 25 per cent. solution of pyrozone on some cotton wound on a broach and put up the canal will instantly stop the bleeding from extirpated pulp so you could proceed to dry the canal and fill it at once. When trying to fit a crown to the root of a tooth, and the gums are bleeding and oozing so that you cannot get it dry enough to attach the crown. apply 25 per cent. pyrozone on a lock of cotton.—L. West, in *Items.*

ASEPSIS.—The ordinary scrubbing the hands with soap and water and then soaking them in a 1-1000 bichloride solution has been proven by bacteriologists as insufficient, and that to render them sterile they must be equally scrubbed with alcohol or either for a full minute to remove the oil from the pores of the skin; then the bichloride solution can have an equal action over all the surface. If the operator has operated or dressed a wound discharging pus, he should sterilize the hands further by soaking them in potassium permanganate solution, followed by an acid to neutralize the color left on the skin. When the hands are finally cleaned, in Europe they have adopted the habit of placing the elbows at the sides and holding the hands up and forward until the operation is commenced, to insure them from contact with anything.

Numerous experiments have demonstrated that the immersion of instruments for five minutes in boiling water is sufficient for their complete sterilization. If they come in contact with fetid or gangrenous substances they should be carefully cleaned, then boiled for fully five minutes before using again; carbonate of soda added to the boiling water sufficient to make a one per cent. solution prevents the instruments from rusting before again being used. I prefer gauze to sponge in operations, and I think sponges can be safely used only in large hospitals where everything is so ordered as to insure not only their proper sterilization, but equally their preservation in that condition.—Sherwood Dunn, *Review.*

FILLING FRAIL TEETH.—We should remember when dealing with frail teeth, having large cavities, that great masses of gold placed in contact with frail enamel walls must result in disaster from the mere effects of expansion caused by extremes of heat and cold. At one moment we drink ice water, bringing the temperature of the teeth and gold fillings down to thirty, and then we deluge the mouth with scalding hot tea, the result being a rapid and unequal rise of temperature, the gold responding and expanding to a greater degree than the enamel.—Dr. Hill, *Items.*

Suggestions on Use of the Hypodermic Syringe.—Drop a small piece of absorbent cotton into the fluid to be drawn into the syringe. Press the syringe against the cotton and the syringe will be filled with a filtered solution; no specks to stop the syringe, and less risk of after irritation at the point of puncture. Hold the syringe so that the beveled surface of the needle's point shall be firmly pressed against the skin. If the syringe is held at a right angle, the least puncture of the mere point of the needle will permit the fluid to pass under the scarf skin on a firm pressure of the piston. A white spot marks the success of the dose. We have thus caused the least pain. If slowly and carefully done no pain whatever is felt. The tissues are wounded the least and absorption is hastened. Always hold the syringe so that the needle points outward and on having introduced a mere drop wait a few seconds for a sedative effect on the tissues, then slowly push the piston home.

If the needle becomes stopped, introduce the wire at the point of the needle, as the plug can be forced more easily in the direction from which it came.

If the needle be stopped by a vegetable substance hold the needle in the flame of the gas or the lamp and the plug will burn out.—"American Medical Compound."

A Low Fusible Metal.—Here is one that it is said can be, when melted, handled with the fingers and poured into a plaster mould, etc.

Bismuth, - -	48 parts.
Cadmium, - -	13 "
Tin, - - -	19 "

—"British Journal of Dental Science."

Dental fees must often take the same course as a basis of settlement as the physician's fees. Discrimination is constant and necessary on account of the fact that all are subject to dental disease and only a small portion of the people are rich.

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, JUNE, 1899. NO. 2.

Selections.

ARTICLE I.

CONCERNING THE POSSIBILITIES IN THE ART OF FILLING TEETH.

H. A. SMITH, D. D. S., CINCINNATI, OHIO.

I have been led to this subject—Possibilities in the Art of Filling Teeth—by observing from time to time, on the part of not a few of our more thoughtful and experienced practitioners a feeling of distrust or disappointment in their ability to save teeth by the operation of filling. This feeling of distrust was given expression by one of our most skillful practitioners at the last meeting of the Ohio State Dental Society, when he said, "I think filling teeth is a failure." Another practitioner of experience and reputation, in Chicago, recently stated publicly, "that quite one-third of his time was occupied in refilling teeth, mostly approximal surfaces of bicuspids and molars, that had not been filled for more than two years." These and like expressions which we often hear, coupled perhaps, with feelings of chagrin at our own frequent failure to permanently benefit our patients, may well cause us to pause and inquire concerning the possibilities in this department of our practice.

The art of filling teeth has been followed for more than one hundred and fifty years. Although filling is the true therapeutical treatment for dental caries, during most of this long period, the practice was somewhat empirical. With the erroneous views held as to the active causes of caries, the operation of filling teeth was based upon observation and experience alone. As practiced now, filling has a true scientific basis.

It must not be forgotten that there are two objects in filling teeth; the arrest of caries and the prevention of its recurrence. Both of these objects must be kept clearly in mind when we consider the possibilities in filling teeth.

The arrest of caries is, as a rule, not difficult. We can accomplish this by removing the active causes of caries, surgically and chemically. But since caries would not long remain inactive following excavation and sterilization we are compelled to resort to filling. With the cavity prepared according to approved rules, and with the use of gold skillfully manipulated, we may, in favorable cases, hermetically seal the cavity. And again we say, caries is arrested.

If the cavity is upon the occlusal surface and we have sealed it so that water, fermentable food debris and micro-organisms cannot enter, we need not concern ourselves about the recurrence of caries. If, however, the cavity is upon the approximal surface, where the teeth are most given to caries, and the operator has only in mind the arrest of caries, the life of his filling, no matter how skillfully made, will not, as a rule, exceed the two years' limit mentioned by our Chicago friend. In cases where predisposition to caries is strong, a close study and judicious application of the *gospel of extension for prevention* is essential for the preservation of the teeth. Prof. Black has written ably upon the whole subject, both scientifically and practically. Upon this point he says, "Whenever the predisposition to caries is found to be strong, this fact calls for the utmost diligence in planning the defence of the teeth, and especially in laying out the lines of the enamel margins of cavities in such positions that they will be well cleansed by the excursions of food over them in mastication. For this purpose the buccal and lingual enamel margins of approximate surfaces should be carried well out from the contact point, and the form of the occlusal surfaces so shaped as to direct the excursions of food well into the buccal embrasures of the interproximate space to facilitate the continuous cleansing of these margins." "With the best technique of our time, the margins of filllings must be regarded as danger lines."

In describing the so-called ideal filling, I have not described an impossible operation. Such fillings are being made by hundreds of dentists to-day. These operations are only possible, however, to the skillful, painstaking, conscientious and heroic dentist. Such men are scientific as well as eminently practical. They are naturally, and by right ought to be, representative of their profession, and that which they accomplish in filling should be regarded as the best expression of the art. Yet operations from the hands of our best men fail over and over. But since the last resources of the art have been exhausted in making these so-called failures, they represent in a negative way, the possibilities in filling teeth. As a rules our failures attract more attention than our success in filling. This is unjust. We should be judged by our successes.

I do not wish to be understood as taking a pessimistic view of the operation under consideration. Filling teeth has been of vast benefit to our race, and will continue to be. Always, when teeth are filled by a skillful and trained operator who exercises his best judgment in the case, the patient receives benefits worth all the services cost. Unfortunately, the people have been led all along to believe that filling was an infallible remedy for carious teeth. This is no fault of the people, but is due to the ignorance and cupidity of a certain class of practitioners.

Mr. Charles Tomes says: "There is, perhaps, no other operation performed upon the human body which is attended with the same unqualified success as that of filling teeth, for we not only succeed in the majority of cases in arresting the further progress of disease, but we also replace the part which has been lost by an imperishable material, and render the organ as useful as it was prior to becoming the subject of caries. It is however, a great error to suppose that filling will, under all circumstances, permanently save the tooth, even in cases which at the time the operation promised favorably." "There are those who are disposed to regard the decay of a tooth which has been filled as the result of the want of skill or of care in the operator. Such an opinion is perfectly untenable when the character of the operation is considered in connection with the issues which are involved, and the various conditions under which disorganization may be effected." "There are other sources of failure than the assumed want of skill in operating, and such are not under the control of the dental surgeon or of the patient."

Notwithstanding the more recent investigations of Miller, Black, Williams, Andrews and of Mr. Tomes himself, all of which investigations have a practical bearing upon filling teeth, the above quotation accurately describes the situation to-day so far as the possibilities of the art are concerned.

Objection may also be made that I have only referred to one kind of filling material—gold—when in a good number of cases the possibilities of filling are best accomplished with other materials. While this is true, it does not do away with the fact that, when its use is indicated, gold is the very best material known to us.

Of amalgams, I may say, in my practice they have been disappointing. The newer amalgams formulated by

Professor Black, called "quick-setting," I have used to a limited extent, and in my opinion they promise to be an improvement over most of the amalgams now in use.

It may be interesting to inquire in this connection what would be the effect upon the practice of filling teeth if the ideal filling material should be discovered? I venture the opinion that no more perfect fillings would be made than now. Naturally, because of easier manipulation, the number as well as the proportion of good saving fillings, would greatly increase. Given the same unfavorable environment, the perfect filling made with the ideal material would not last any longer or preserve the tooth any better than the perfect filling made to-day of gold.

In future if the operation of filling teeth shall meet the reasonable expectations of patients, more study and thought must be given by the dentist to the prevention of caries. Prophylaxis should at last receive attention equally with the mechanical technique of the art.

DISCUSSION.

Dr. D. A. House: Some have made the statement that our best operators have reached the limit in skill and perfection in the filling of teeth, and further improvement must come in the changes of environment, which will lesson the recurrence of decay. It is not my intention to discuss the methods—to improve the environment. To increase the amount of oral secretion would prevent it.

I will consider whether the possibilities in the art have been reached. Concerning the question "Is the filling of teeth a failure?" it is no more applicable to us than that the science of medicine is a failure. A body is always liable to the recurrence of disease. Because a great number of teeth fail in the lapse of two or three years is not a rule that filling teeth is a failure. It is usually due to the carelessness of the operator. The work of some of our best operators is still open to criticism. Not so in every filling. Many of the smallest, most difficult to make, reach a point which cannot be excelled by our present filling material. While I acknowledge and practice the desirability of keeping the enamel margins out of point of contact, yet many operators cease before this has been reached because of pain to the patient. So long as the dentist is required to stand this strain he will certainly become tired and nervous and so much overtasked that it will be impossible to do his best work under these conditions. If it were possible to charge sufficient for the work so as to make as good a living within five hours of a day as he does now in ten, the quality of work would no doubt be much improved. Does it not often occur to the operator "Oh, I'm not getting much for this," so I will make it accordingly. This makes poor fillings.

Another thing is the fear of becoming known as slow operators. Those known in the profession as best and most skillful are the most rapid. These things often make the work a failure. I have known good operators to spend half a day on one filling. There is no doubt that rapidity is often a source of failure in operations. Therefore until we get better prices for our work and put more time on fillings and are able to cut living dentine without torturing patients, the possibilities in the art of filling have not been reached. [Loud applause].

Dr. Barrett: I am not going to offer any commendations on this paper. "That life is long which answers life's best ends." That paper is long which most completely covers the subject in the fewest words. Although quite a complete paper, there are yet a few facts which have not been fully utilized.

I want to refer to a few of the difficulties which must be overcome in the insertion of the filling.

It has been positively determined that caries is due to the solution of the calcic salts through which the action pronounced by the proliferation of micro-organisms, these coming in through the opening in the enamel, or because of some imperfection in the enamel. This is followed by a complete breaking down with the collection of many organisms. We call this the field of infection. Suppose we have a cavity which is just below the point of contact with the next tooth, at which decay usually has its inception. The reason, it is just the point at which food lodges, which becomes the matrix in which the organs proliferate with the production of an acid, and hence we have below this point the beginning of decay and solution of enamel.

The usual process of preparing a cavity before filling is to excavate as much of cavity as is disintegrated; but you saw in the slides that beyond this portion we had the zone of infection or commencement of decay, and which precedes the breaking down in the cementum, in the openings called the inter-tubular spaces. These enlarge and two spaces will unite into one, break down and the zone of infection will enlarge, and this continues unless checked. I do not suppose that a cavity is completely excavated when we reach inward near the limit of the zone of infection. Suppose I excavate and prepare my cavity, as most dentists do, have I reached the point of danger? Will an ordinary filling of this kind prevent the tooth from decay, and the entrance of the organisms which we know and which we all are the cause of dental caries? If we know the absolute cause, can we remove the last predisposition to decay? Yes, if it were possible to reach to the limit of this zone of infection, and if at the same time we can so reduce the environment as to prevent further decay. Dr. Black has thoroughly demonstrated this, and it is so strange that so many think with their elbows and do not comprehend the fact.

I want to make a point right here, and that is that this zone of infection has gone beyond the point at which excavation of the tooth would in almost any case endanger the pulp and destroy the vitality of the tooth. It is impossible to excavate back to the point of infection, and yet as long as there is that zone of infection in which has been implanted all the micro-organisms which will produce the caries, and everything necessary to carry it on, there is danger of the filling becoming a failure. We have conditions which will cause re-decaying. That is the great trouble and danger; we want to overcome it if possible.

We are sometimes asked "What does all this mean about the bug theory of caries? There is a practical use of this. All of these organisms which produce this disease are called ærobic—that is, live only in the presence of oxygen. If imbedded in tissue, where oxygen could not penetrate, they could no longer exist. We can artificially produce this, and hence when we have thoroughly, hermetically sealed that cavity from oxygen or the air, we have destroyed these organisms, and that is why a filling must be absolutely perfect if it is going to preserve the tooth; not the slightest chance for the entrance of bacteria. Air must be excluded and the cavity should be hermetically sealed.

Gold is not the best material with which to hermetically seal a cavity, but it possesses other qualities which make it the best filling material. Gutta-percha is probably the best material for preventing recurrence of decay, but it requires a very high degree of skill to put in a filling of this material. We can use some antiseptic which will penetrate the dental tubuli and thoroughly destroy the gums, hence the necessity of thoroughly sterilizing a cavity before commencing a filling. I do not pose as the highest authority on filling teeth. There is something else which I think necessary—the use of something more penetrating—which will protect the tooth from recurrence. I use carbolic acid, and then I cover over that portion which I think contains the infected dentine some kind of material before inserting the filling. I use a solution of some of the balsams—Canada balsam or something else. I spread this over the infected area and it assists in preventing the penetration of air to this point to cause proliferation of micro organisms.

After determining how far has been the penetratium of micro-organisms and excavating as much as possible, the next thing is to thoroughly sterilize it by soaking well with some thorough antiseptic, then drying and covering the affected area with something to exclude air, and over this insert filling. Even then you have not a perfect filling. After having gone over all this the next thing is to see that the mouth is thoroughly antiseptic.

I have never found such a case as this, and I do believe that no such condition as this exists, as it is impossible to keep the mouth in complete antiseptic condition. The ordinary mother, for example, has something else to think about than care of the teeth. She does not give them her care, and consequently the time finally comes when she comes to you with her teeth in the worst possible condition. If she would use some mouth wash and thoroughly sterilize her mouth, recurrence of decay would not take place.

The chief factor is to be thorough in the sterilizing of the cavity and keep it so. If we do this there need be no fear of recurrence of decay.

Dr. Butler: Dr. Barrett has such a wonderful power of suggestiveness that it may not be within my power to have any effect upon him. But as Dr. Smith has said that many declarations that filling teeth is a failure have been made, I will say I am one who made such a statement, and I do not expect to use any argument to establish what I said as true. I said it with this view of the subject that, with all the improved methods of securing a tooth from moisture during the process of the operation and with what is supposed to be the most modern achievements in the way of instruments and preparation of gold, I question whether there are any more successes or as much following the methods in that direction to-day as there was forty or fifty years ago. Still, if that be true some will say that it is not so, but nevertheless look the case fairly in the face. Take the number of operators to-day and compare them with the number forty years ago, and the question is whether we make fillings that are any more saving to the tooth. If we are not doing so the question still comes up, is it a failure? We do not any of us question the operator's ability to fill a tooth, but it is the recurrence of decay. Dr. Smith has spoken of gold being the best material, and he has also mentioned some other materials. Gentlemen it is not the filling that fails; it is the tooth structure. That is the point and there is where our great effort should be put to save a tooth from destruction That is the prime object of patients coming to us, and that should be our principal effort.

Dr. Barrett, I think, stated a complete and perfect gold filling would hermetically seal a cavity. With all our fine instruments and skill and book gold, etc., how many of us succeed? Take all the fillings made by the most skillful operators, put them under the magnifying glass and see what kind of margins a great many possess.

We have two structures to deal with—gold and enamel. I fear very few come completely up to the enamel, it is so easy to bruise and chip off pieces of enamel. Gold is soft and maleable, while enamel is hard and brittle, and that part which is elastic we bruise. How are we going to have thorough sealing of cavity? It is the most infinitesimal openings through which these micro-organisms pass.

Why is it that some of our old soft-foil manipulators with hand pressue put in fillings which stayed and kept tooth substance? The great power of tin lies in the fact that you can put it so close to the walls of the cavity that it seals the cavity and does not bruise the walls of same as under the constant hammer and hammer, that is necessary with gold.

Take our rapid operators, for example, who put in a very large filling in a very short time. I think it should take a half day to put in such a filling so it will save the tooth. Take this class of fillings, put in in a very short space of time and examine them in a year or two or more. Take the fillings out and you will see there is a certain layer of dentine under the filling which is devitalized. This comes from the over-packing of gold—excessive hammering. In such cases it is simply a matter of toleration how long that filling will be retained there. We have this tissue between gold and living tissue, which is dead, and it does not take long for moisture to creep in there and cause further decay.

"Gutta percha," so says Dr. Barrett, but it takes a good amount of skill to put in. It is also quite porous. Take it out of a cavity after having been in for a short time and hold in any flame and you will see it is porous—water will be driven from it. If placed in some essential oil before applying to the cavity it will exclude moisture to some extent, and also aid in sticking and cause it to stay in the cavity. It rolls out very readily also. It should be used only as temporary filling.

This talk about perfect fillings; they are perfect enough, but do they seal the cavity perfectly? That is the main point for us to consider. Everybody in these times tries to get hold of some of these golds which are so plastic and easily manipulated. Some of the older members of the profession when this gold first came in thought it was a marvel, and we would have perfect fillings. After a while we found these fillings were leaky, and patients came back to us. I just took the privilege of examining around the borders of some of the fillings made here, and I found they were very poor. If we pack the gold by hand pressure we must use great force. It is no trick to pack gold in mass, but it takes a good goldsmith to operate along the line of surgery, and we have some of the finest operators along that line. We should have some of the finest operators along that line. We should stick to fine-pointed instruments around all the borders.

Dr. Smith: Dr. Butler has stated he believes we fail. We are not discussing failures, but perfect fillings. He has said filling teeth was a failure before, and he said it was due to the fact that we did not get hold of the case early enough. What do you mean by that?

Dr. Butler: If I did make that statement I state it more emphatically. The smaller the cavity the less deeply we have to go into the tissue and the better the vitality of tooth. I doubt whether a tooth which is two thirds gold is going to remain there in as good shape as if it had one-half the amount of gold—if the pulp is alive. In the first place you have a larger area of margins to secure, and in the second place you have got a larger bulk of gold. I doubt very much if the tooth is as strong in the former case.

Dr. Cook, of Chicago: The point which struck me is this—the first cause of decay. Can we make a better tooth by filling than it originally was? If we have a fracture of radius it is not possible to have as good bone there as we had before fracture. Therapeutic measures, which is simply a filling, can be made perfect, and I believe very much in the statement of Dr. Butler, who said that the *tooth itself* did not last over two years. Dr. Black has recently been carrying on some experiments, which I have seen a great deal of, with filling material, and that is in regard to packing amalgam. The ideal filling lies in the plastic operation. We are not doing the gold work that was done by our older operators. The operation of packing the gold with mallet against the dentine is, to my mind, a very important one.

The bruises to the dentine are also important of consideration. I had the pleasure some years ago of seeing a filling made by Dr. Holbrook which had been in there for forty years. The patient was a women. She had had her teeth filled by modern dentists and had lost all except the one filled with soft gold forty years ago. You could take the gold and pull it out easily.

In regard to amalgam, I think the failure is in the preparation of the cavity, in not getting as perfect a cavity as in the preparation of same for gold. Secondly, I do not believe there is one dentist in twenty five who packs his amalgam into the cavity. I never did it until this spring, and I have been filling teeth for twenty-five years. I experimented on the artificial caries of teeth with fillings and I found that the recurrence of decay of fillings made by different men was nearly the same—very little caries. I have put the teeth into incubator and conducted experiments the same as Dr. Miller has done in his experiments for artificial caries of teeth.

Amalgam, if properly placed in, is a very valuable filling, because there is an antiseptic condition there that prevents the growth of micro organisms in the mouth or production of artificial caries. The therapeutic part of amalgam filling has a very important influence to my mind. Some fifteen or twenty of us packed and filled cavities of teeth for Dr. Black's experiments on the teeth, as we ordinarily did in practice. Each man putting on an amount of pressure as he did in practice, his idea was to find out experimentally the amount of pressure we used in packing a filling. About one and one-half pounds was the average pressure put on the fillings. Dr. Black claims it requires about eight pounds of pressure to pack a perfect amalgam filling; and when this is done there is a shrinkage to the tooth and the cavities were much better filled.

This is an important thing to my mind and one of the possibilities in making good teeth. And I think that Dr. Black very soon demonstrated that most of those who put in amalgam fillings did not use sufficient pressure.

Dr. House, Grand Rapids, Mich.: I have examined the work of a number of dentists in Michigan, and one of the greatest inspirations to me as a young man was in looking over the fillings made by old men. There are fillings in mouths of patients of mine, and in that State, that have been there twenty to twenty-five years. It was my fortune to look over some fillings put in the mouth of a woman twenty-five years ago by a dentist of Detroit.

Dr. Loefler: I wish to make one point. The paper, as I understand it, is this: Concerning the possibilities of filling a tooth. Go on this supposition. Suppose we make a filling now which is perfect, restore the tooth and put it in as good condition as it was originally. If this were possible, would this insure the tooth against any further decay? I want to put that question. Would that insure the tooth against any further decay? If we could reach that high ideal and give it that protection, would that be as much as we could expect? Decay did start there originally.

Dr. Smith: One is possibly of saving tooth and the other the art of saving it.

Dr. Loefler: The point I wish to make is that if we might reach that high degree of skill that Dr. Smith spoke of—if we could reach that skill to make it as approximately as good as that—would that insure the tooth?

Dr. Smith: I purposely avoided discussing failures. I know every man has them, and has his reason for it. To go into discussion of these failures—there is no end of them. My aim was the means by which we might attain the highest degree of the art. Has dentistry advanced in the last century? Yes. Judge it by its best operators. If your filling fails, why is it? Have we exhausted the resources of the art? I want you to look at your perfect fillings. Why do not they save the teeth? Not the poor ones. It is a broad subject, and I confined myself principally to the art. If we reach the highest ideal of the art, whether we use gold or amalgam, can we save the teeth?

Dr. Stephan, of Cleveland: I am glad Dr. Smith has mentioned this last point. I think that to-day we make better fillings than were ever made. These fillings we see to-day are the best of these old operators; we do not see their failures. There are some more rules which have not been touched upon. That is the restoration of contour in bicuspids and molar teeth. I do not think the operator takes enough recognition of this point, so that he will restore the original shape of the tooth and also restore interproximal spaces. I do not think we ought to excuse failure by any lack which we might have in restoring that tooth into its natural shape. How are we sure of that fact? Every man is sure of failure over some work that he has made. When the filling is better the tooth fails.—*Dental Register*.

ARTICLE II.

INFLAMMATION OF THE PERIODONTAL MEMBRANE, PERIODONTITIS, ALVEOLA ABSCESS, NECROSIS, AND OTHER SEQUELÆ.

R. DENISON PEDLEY, M. R. C. S., L. D. S., ENG., F. R. C. S., EDIN.

When the upper teeth are affected, pus may find its way into the palate, or open into the floor of the nose, or into the antrum, as shown by the following case:

M. E., aged eight years. Measels three years ago, since which there has been a constant discharge from both ears. Five weeks ago left cheek began to ache and swell. A doctor removed a tooth and matter came away. A week later a lump was noticed below the left eye. The face being swollen and red, hot fomentations were applied. The patient was a well-nourished child, with fair hair and blue eyes. The face was considerably swollen on the left side, involving mostly the cheek, the latter being red and brawny. There was fluctuating swelling below and external to the inner canthus of the left eye, and at its summit pus was oozing from beneath a thick yellow crust. The crust being removed, examination with a probe showed that the fistulous opening was in connection with the antral cavity. On inspection of the mouth, a scarcely healed wound was seen between the temporary incisor and molar tooth, indicating clearly that the temporary canine had been removed. The hard palate on the effected side was quite normal, but, viewed from the outside, the anterior wall of the left antrum was more prominent than the right. No fluctation could be obtained through the antral wall. The child was placed under chloroform, and with an ordinary gimlet, previously rendered aseptic, the orifice through the canine socket was enlarged. The developing permanent canine, lying quite loose and in front of the opening, was removed. A probe was then thrust into the antrum and out on the cheek. The cavity of the antrum was carefully explored at the same time, the walls appearing healthy, except anteriorly. The sinus on the cheek was dressed with boracic ointment, and a pad placed over it· The antrum was syringed out with warm boracic lotion through the perforation of the jaw. The mother was directed to syringe it frequently with this lotion. The sinus of the cheek healed in a few days, and ten days later the wound in the mouth was closed up.

A collection of pus in the antrum in connection with temporary teeth is of rare occurrence. Owing to the small size of this cavity, the temporary teeth lie well outside of its walls, which are comparatively thick. In this case, pus from an alveolar abscess at the end of a temporary canine had burrowed deeply beneath the permanent canine, and, finding its way into the antrum, had pointed through the anterior wall and opened out on to the cheek. Far more serious injury is likely to occur as the result of periodontitis. Numerous cases are reported to Tomes* and Talter† where pyemia and death have occurred.

Mr. Arbuthnot Lane, of Guy's Hospital records the following case, an abstract of which is given :

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*"Manual of Dental Surgery."

†"Surgery and Pathology."

ALVEOLAR ABSCESS; PYEMIA; EXCISION OF THROMBOSED VEINS.

H. H., aet. four years. Suffering from a swelling over the left half of the lower jaw, which commenced with toothache about a week before. Five days previously an abscess burst into the mouth. Temperature on admission, 105.4 degrees. There was an alveolar abscess in connection with a second temporary molar. This was removed, and the abscess cavity scraped and thoroughly cleansed out under an anesthetic. The boy became jaundiced, and suffered from recurring rigors. Mr. Lane excised the thrombosed veins, the external jugular and branches of the facial. The abscess cavity and bone were cleansed thoroughly and packed with iodoform gauze. Many inflamed lymphatic glands were removed. This operation was followed by disappearance of the jaundice, but subsequently the child died, and it was found there were a number of abscesses in the liver and lungs. These were produced by septic emboli before the operation took place. —*Lancet, Nov. 5th, 1892.*

The case is instructive, not only in showing how pyemia may be caused by a tooth, but as showing that the removal of thrombosed veins is effectual in staying the pyemic process while yet local and uncomplicated.

A case very similar to that of Mr. Lane's was reported in *The Lancet* of June 25th, 1898, by Dr. Charles Bolton, the senior resident medical officer of the Evelina Hospital for Sick Children. On an abstract is given :

A CASE OF ALVEOLAR ABSCESS; DEATH FROM PYEMIA IN EIGHT DAYS.

A boy, aged four years, brought to the Hospital on account of "pain in the sides." No previous illness except measles. For many weeks his mother had noticed that his teeth were "going very bad." She took no notice, as "bad teeth were so common." The boy made no complaint until five days ago, when he complained of "toothache."

His face was a little swollen on the right side on the next day, and a medical man who was sent for said patient had a gum boil, and ordered poultices. Two days later the mother took him to a hospital, as he seemed to be getting stupid, and here she was told that he had a gum-boil, and was given some medicine. The child was much worse on the following day, and complained of pain in the sides, and another medical man who was called in said that he had pleurisy, and ordered poultices to the chest. When the child was admitted, he was drowsey and fretful. Skin hot and dry; temperature, 104.6 degrees. There was a hard, tender, non-fluctuating swelling on the right side of the lower jaw, but nothing else abnormal could be felt in the neck. The breath was extremely offensive, and the tongue was coated with a greyish fur. The crowns of several teeth were completely decayed, and the second lower right temporary molar was carious and loose, a brownish purulent discharge issuing from its socket, the surrounding gum and adjacent part of the floor of the mouth being ulcerated.

The loose molar was extracted, and a quantity of thick pus escaped: The teeth and gums were thoroughly cleansed and the mouth and abscess cavity were irrigated every four hours with Sanitas lotion.

The child became steadily worse. The temperature ranged between 104 and 106 degrees, once or twice rising to 107 degrees. Mr. Makins exposed and removed most of the external jugular vein and branches of the facial. The child, however, died, and abscesses were found in both lungs. Some of Dr. Bolton's remarks concerning the dental aspect of the case are well worth recording: "The next point I wish to refer to is the inattention paid to children's teeth, not only by parents, but even by members of the medical profession. Of this there are numerous examples daily in the Evelina Hospital. It is quite a rule for these children never to have any pain at all. This point is not paid much attention to, but every one can verify it for himself, and he will then be surprised at the amount of destruction which can take place in children's teeth without the occurrence of any pain whatever. In reference to the treatment of alveola abscess in connection with temporary teeth, there is no doubt that in all cases the proper thing is to extract the tooth at once. Neither to apply poultices nor give medicine. The abscess then drains through the socket, the cause of the abscess is removed, and the permanent tooth which lies under the temporary one will probably be saved, which it may not be if the abscess is allowed to run its course unopened."

It is really a matter of surprise, considering the frequency of such septic inflammation, that fatal cases do not more frequently occur. It is by no means an uncommon occurrence in examining the mouths of children to find several sinuses or fistulæ in the mouth, each one connected with a separate tooth, duly discharging its share of pus, which is daily mixed with the food and saliva and swallowed. In connection wlth these teeth, or their roots, septic matter has escaped into the alveolus, periodontitis has followed; with the swelling, formation of pus, its escape through the alveolus, and the subsidence of the symptoms. Many such cases are of a passive type, passing through all the stages of inflammation and suppuration with very little pain and consequent distress, though it by no means follows that the results are less serious, as the following case will show:

A. B., a boy aet. five years, brought to the hospital because he had a sore mouth and bad breath. The mother stated that a few weeks ago the boy had a swelling on the side of his cheek.

The patient a puny child of dark complexion, had a foul breath and coughed incessantly. On examination, all the temporary molars were found deeply carious. On the right side in the upper jaw both upper molars were loose, the gum was dark red, and round the necks of the teeth there was a greyish slough. Pus was oozing out opposite the apex of the roots. On removing the teeth, the fangs were quite dark in color and necrosed. A good sized portion of the alveolus was found lying loose. This was removed, and also the crowns of two bicuspids which were offensive and almost black. The cavity was well mopped out with a solution of carbolic acid, 1 to 10. The mother was directed to syringe the cavity, and to wash the mouth out frequently with a solution of potassium permanganate. Internally, quinine and iron were prescribed.

This child had suffered very little pain indeed; so little that it was the child's breath alone which attracted attention.

Children who are wrongly fed, starved, or suffering from constitutional diseases, such as tuberculosis, rickets, or syphilis, are subjects of periodontitis. It generally commences with marginal ulceration of the gums, affecting carious and non-carious teeth alike. Many teeth may be involved, or one tooth alone. Sometimes it is symmetrical, as in the following case:

T. V., aged three years. A delicate boy with well-marked rickets. The mother says "food passes through him as soon as he eats it." The child cannot masticate because of loose teeth. On examination, the teeth are seen to be well formed, none are carious. The lower and upper canines are much raised above the teeth, and are somewhat loose. The patient cannot close his mouth properly, as only the canines meet. The gum is ulcerated round the necks of the teeth; the alveolus is expanded beneath the right lower, and above the right upper canine. Pus is oozing from sinuses. On removal of the teeth, the periosteal covering was found much thickened. The teeth, however, were neither carious nor discolored.

Exfoliation of the alveolar plates following periodontitis is of frequent occurrence after scarlet fever and measles, and though it is in many cases intimately connected with carious teeth and roots, this is not necessarily the case. When associated with carious teeth or necrotic roots, it would appear that the starting-point may be through the fang of a tooth or external to the teeth. The inflammation in the latter case spreads from a purulent gum margin which surrounds them. This latter condition is especially noticeable where the teeth are quite sound. The continuity of gum with periodontitis membrane, and the connection of the latter with the periosteum of the jaw, will serve to explain the means by which septic inflammation, either occurring within or outside, may involve the deeper tissues of the jaw; the symptoms in both cases are the same. The inflammation is of a passive type. A child is brought up for a swelling of the face, generally a foul breath and a discharge from the mouth, but very little pain. On examining the affected side, the gum will be found puffy, swollen, and deeply ulcerated round the necks of the teeth, leaving bare the alveolus. The teeth will be found quite loose, and pus oozing from the gum margins. Beyond removing loose and carious teeth, and seeing that the mouth is constantly cleaned, no treatment is required. In a month or six weeks the sequestrum will become quite loose, and can then be easily removed.—*British Journal of Dental Science.*

ARTICLE III.

PYORRHEA ALVEOLARIS.

M. L. RHEIN, M. D., D. D. S., NEW YORK, N. Y.

Read before the Chicago Dental Society, Feb. 3, 1899.

Pyorrhea alveolaris describes a purulent discharge from the alveolar region. It is to-day the name most generally used to designate any form of pathological condition of the pericemental tissue, which, if neglected, after a certain lapse of time will be marked by more or less purulent discharges, and finally result in the loss of the teeth affected. It is impossible not to recognize the value of certain names that various men have endeavored to introduce as a substitute for the term pyorrhea alveolaris, because they all describe certain forms of this pathogenic condition very clearly. The fact that each of these names has its limitations to a few of the numerous types of this disease renders necessary a generic term. The name pyorrhea alveolaris is to day in use by a large majority as indicative of the entire field covered by the disease and can always be more clearly defined by the addition of proper adjectives where the etiology is understood.

The exciting cause of pyorrhea alveolaris is invariably some local irritation which, not being removed, sets up a condition of inflammation which prevents nutritive repair of the diseased pericemental tissue. This condition becoming permanent, results in the continued liquefaction of these tissues subject at a certain stage to infection, at which period the process of retrograde metamorphosis and consequent destruction of the entire pericemental tissue is more or less rapid according to the resistive energy of the individual's vitality.

The disease may be divided into two general classes: One where the exciting cause is practically the only cause of the disease, and which makes the condition purely a local trouble. This form may be called pyorrhea simplex in contradistinction to the other class, pyorrhea complex, where there is a predisposing cause back of the local irritant.

Pyorrhea simplex is a form of this disease to which it is my purpose to give very little attention this evening, though it is impossible to pass it by without some consideration. Having once begun to destroy the pericemental membrane, if allowed to progress without proper care and treatment, its results, as far as the loss of the alveolar parts are concerned, may be as destructive as that produced by any of the graver forms of this trouble. Pyorrhea simplex is seldom seen early in life except as the result of traumatism. Later in life lack of attention to the proper hygienic care of the mouth and the consequent encroachment of salivary calculi against the peridental membrane is perhaps the most common cause. "Dentistry up to date" as practiced by a large class of incompetent men bears the responsibility of being the cause of a large proportion of the cases of pyorrhea simplex. This may be illustrated more clearly by the mania which has overridden the profession for the past few years, and is happily now on the wane, for placing bridge work in every conceivable place. An ill fitting cap, the unnecessary use of ligatures, injudicious wedging, badly fitting plates, are a few instances of the frequent causes of attacks of local pyorrhea which may be laid at the door of the dentist himself. Similar attacks are also liable from any traumatic cause, such as a broken toothpick left between the teeth, a blow, pistol shot, a fractured tooth, etc. A great deal has been written at various times about the danger of pyorrhea infection extending from an affected tooth to others in the same mouth, but a close observation of many cases of local pyorrhea due to traumic origin, has clearly shown that the injured tooth or teeth are the only ones that are ever involved.

PYORRHEA COMPLEX.

Although in all forms of this disease our chief duty is to keep the mouths of our patients free from any exciting causes and reduce all conditions of inflammation, still, where there is a predisposing cause which in itself is productive of the local inflammation and the irritation against which we are contending, this predisposing cause in such cases becomes *the* cause. In such cases all our efforts at purely local treatment are bound to fail in effecting any permanent results, unless this predisposing cause is either removed or checked. In fact, in these cases the local pathogenic manifestations known as pyorrhea alveolaris is only one of other results of this general interference with a proper equilibrium of the circulation. There is scarcely a vital disorder of any consequence which does not more or less interfere with the proper nutrition of the body. The extent of nutritional disturbance will invariably regulate the degree of severity of the local manifestation.

In order to properly appreciate this malady and to give the proper professional service to patients suffering from the disease, it becomes our first duty to discriminate as to the form of trouble which presents. A proper diagnosis between pyorrhea simplex and complex must first be settled before intelligent treatment can be commenced. It is unnecessary for me to enter into detail as to the manner of diagnosing a case of pyorrhea simplex by exclusion, except to say that every possible functional disturbance or toxæmia should be eliminated before any such diagnosis can be adopted.

The importance of a proper diagnosis can perhaps be more properly appreciated when we remember that our prognosis depends entirely upon the diagnosis which is made. To illustrate: A patient suffering in the last stages of diabetes or tuberculosis, etc., would present a very deplorable condition of the mouth. Having made our diagnosis, the prognosis would be so bad that no treatment other than the simple alleviation of local irritation would be attempted. No hope for any better result could be entertained. This is one of the many reasons why it is important that the forms of pyorrhea complex should be classified according to the predisposing disease in each case.

In August, 1894, at the meeting of the American Dental Association, held at Old Point Comfort, Virginia, I presented a method of classifying these forms of the disease which later has been practically followed out by Prof. W. D. Miller, of Berlin, in his "Text-book on Operative Dentistry." This classification is made by simply prefixing to pyorrhea an adjective stating the name of the disease which is causing the pathological symptoms in the oral cavity, as "gouty pyorrhea," "diabetic pyorrhea," etc. It is unnecessary to enumerate the subdivisions that might be listed, as they embrace all causes that may disarrange nutrition. In a paper such as this it is impossible to enter into the detail that is necessary in order to clearly appreciate each type of this disorder. There is comparatively as great a difference between tubercular pyorrhea and pregnancy pyorrhea as there is between tuberculosis and pregnancy. Almost as wide a difference in gouty pyorrhea from anæmia pyorrhea. All that can be done in this brief paper is to generalize and illustrate the differences that exist by citing some particular cases.

Most forms of the disease are accompanied by deposits of concretions upon the roots of the teeth of varying consistency and different compositions. These deposits vary greatly according to the form of the diseases; and again there are some forms where no deposits are found. Such a condition is found in liparous pyorrhea depending on a fatty infiltration of the pericardium, in which condition there is undoubtedly found more or less lipacidæmia. Such a condition can be perhaps better understood by giving history of a case from practice :

Mrs. S. presented in February, 1887, for treatment for "loose teeth." Married; age about thirty-five; childless. Local examination showed thirty-two teeth in normal position with perfect occlusion of all the teeth. No tooth had ever been filled, in fact, it was her first visit to a dentist since childhood. Except a small buccal cavity in the third right superior molar no defect was found upon any tooth. As far as lay in her power she had been scrupulously careful in reference to maintaining a cleanly condition of the teeth and mouth. No deposits of any kind could be found upon any of the teeth, nor upon the roots, although there were pyorrheal pockets extending half way up the roots on every tooth in her mouth. Slight pressure upon the gums would produce a whitish serous exudation from these pockets. She was very stout, in fact weighing over two hundred pounds, and was sent to me by her physician with the statement that she was under treatment for fatty degeneration about the heart This medical treatment at that time consisted mainly of long, rapid walks, early in the morning, with the free use of plenty of water and salines. In the oral cavity ordinary escherotic treatment, followed by stimulating and soothing applications was pursued. There followed a very marked improvement in the local symptoms. This was supplemented by instructing the patient in the proper manipulation of the brush so as to massage the gums over the roots as much as possible. Treatment was followed up at intervals for over a year, but without a thorough healing of the pockets, although their depths had been greatly reduced. In the spring of 1888 the patient went abroad and at Marienbad placed herself under general treatment. I did not see her again until 1890, when I found her weight very much reduced and she considered herself practically cured. All the local symptoms had entirely disappeared and no trace of any pyorrheal pockets could be found. A record of pyorrhea cured by constitutional improvement. I had an opportunity in the summer of 1898 of again examining the mouth of this patient and found everything in a normal, healthy condition.

One of the most remarkable characteristics of pyorrhea complex is the fact that it makes its appearance as one of the earliest symptoms of the disease of which it is a result. The other portions of the body which soon exhibit manifestations of malnutrition are the nails, the hair, the skin and the cornea of the eye, but none of them earlier than the pericemental tissue. In a paper entitled "Studies of Pyorrhea Alveolaris," published in the *Dental Cosmos* of March, 1888, I called attention to this fact by stating: "The gums and peridental membranes being fed by about the most remote portion of the blood tracts, it is no more than reasonable to suppose that these organs should be the first to exhibit symptoms of a lack of nourishment in their elemental corpuscles." This feature is a very valuable aid in diagnosing the true cause of this trouble, especially in the early stages when the general symptoms have not been very marked. It frequently falls to the duty of the conscientious dentist to be the first person to call the patient's attention to the beginning of some serious constitutional disorder. A careful observation will show clinical features in the local symptoms of Bright's pyorrhea that appear in no other form. By analogy, this undoubtedly holds good in every form of pyorrhea complex that exists and has been practically demonstrated by the writer in numerous cases. The unfortunate phase of this subject in our profession has been that definite authorities who believe in a constitutional cause of pyorrhea alveolaris have attempted to confine it to certain particular diseases.

Prof. Pierce in the extremest views which he gave forth as to uric acid being the cause of pyorrhea left open so many loopholes as to possibly obscure the serious role which uric acid plays in a large number of forms of pyorrhea. Uric acid—or, to be more exact, quadriurate—is a regular constituent of the blood. According to the latest researches it is safe to assert that uric acid is the result of the disintegration of the albuminous substances of the body, especially of the nucleins. Consequently, whatever should give rise to a greater form of metabolism, whether food, medicine, poison, or disease, would insure a greater amount of uric acid formation in the blood. As long as the kidneys perform their function in a normal, healthy way and carry off these products of metabolism disorders may be divided into two types: First, where there is an excessive formation of uric acid in the system as is found in gout. In these cases local disturbances are produced because all of this excess of uric acid is not at all times eliminated. When uncomplicated by disease of the kidney itself, general treatment is most efficacious. Second, where, through disease of the kidney itself, there is retention of uric acid in the system without necessarily any excessive quantity being formed. These are by far the graver forms for treatment and are the most difficult of diagnosis, because urinal examination demonstrate very little. It is unnecessary at this time to take any position as to how forms of these quadriurates reach the roots of the teeth, but the clinical fact remains that in certain cases of this class are met some of the most painful types of pyorrhea alveolaris and the most difficult of diagnosis, where no apparent lesion at the gingival border exisits, but where we find hard, flinty deposits near the apices of the roots. In these cases our chief reliance for diagnosis must depend not upon examinations of the urine, but upon examinations of the blood itself.

If theorizing is at all in order; I would quote from a paper of mine on the "Oral Expressions of Malnutrition," published in the *Dental Cosmos* of June, 1896: "Following along the line of Ebstein's theory, we can readily believe that on account of this deficiency of elemental corpuscles in the pericemental tissus a necrotic area is set up; a hyperacidity of the system being present at the same time, it follows that there is a strong tendency for the uric acid in the circulation to be deposited in this acid, narcotic area."

It is a well-known clinical fact that hyperacidity of the oral cavity is a marked feature of those forms of pyorrhea where serumal deposits predominate. This hyperacidity is unquestionably due to the lack of a proper alkalinity of the blood, and it has been thoroughly demonstrated that this lessening of the alkalinity of the blood favors the deposition of uric acid in the form of urates. There is no reason why this deposit should not occur on the roots of the teeth as well as in the phalangeal articutions. Assuming these facts to be as represented, there can be no question but that in all cases of functional disturbance, where, through disease of the kidney itself, elimination of uric acid is more or less incomplete, or in those cases where there is a large overproduction of uric acid, the urates become one of the important factors of local irritation and resulting inflammation.

One of the strongest opponents of Prof. Pierce's has been Dr. Talbot, of Chicago, who, if I have properly comprehended him, has studied the forms of neurotic pyorrhea and has endeavored to make some form of nervous disorder responsible for every type of this malady. Credit is due to Dr. Talbot for calling attention to the atheromatous condition of the capillaries in the pericemental region in severe types of pyorrhea. It is not my wish to underestimate the number of cases of pyorrhea alveolaris which owe their origin to nervous disturbances, but it is relatively hard to fix upon any exact ratio of the number of these as compared with other forms of pyorrhea. It is very likely that their number is greater than is generally believed.

While considerable attention has been given in these few remarks to the influence of vital disorders as a predisposing cause for various forms of pyorrhea, we should not lose sight of the important role played in this direction by poisons irrespective of whether the general condition is good or not. Mineral poisons sometimes administered with remedial intent, as mercury or bismuth, or the gradual absorption of the individual of some substance as lead, frequently is the direct cause of an attack. In this connection our attention may well be directed for a moment to a class of cases that are distinctly toxic pyorrhea and have frequently been very difficult to diagnose. In these cases there is found a lack of tonicity of the muscular coats of the intestines and considerable retention of fæces accompanied necessarily by absorption of more or less virulent toxines. My attention was first called to this condition from a case wherein the experience of clinical observation first led me to assume that the disease present was of the complex type; but the most careful medical examinations, repeatedly made, failed to find any distinctly functional disorder, until this clew was followed up. Treatment involving not only the toning up of the intestines but also rendering the contents thereof nontoxic, was followed by the most gratifying results. Since then, my attention has been directed to numerous instances of the absorption of intestinal toxines as the cause of pyorrhea alveolaris, and it is hoped that this attention drawn to the subject will be of some value to others in the treatment of some obscure cases.

Of all the forms of pyorrhea that have come under my notice in which the conditions, from a local standpoint, have been most serious, and where the prognosis is contradistinction has been most favorable, none have played so prominent a role as those owing their origin to some form of anæmia. It is remarkable how little attention has been given to this form of the disease and how common it is. It is frequently met as a plain, general anæmia, owing its origin to no particular source, and again we find the anæmic condition due to a functional disease of some special organ. The control of the general condition invariably brings about an easy cure of the local symptoms if too much of the pericemental attachment has not been destroyed. This condition is more frequently met among females and is often concomitant with uterine disorders. An illustration of such a case may be interesting: Miss F., spinster, age forty-nine, presented herself in December, 1896, for treatment for pyorrhea alveolaris which was manifest in the lower maxilla, the upper teeth with two exceptions being artificial. Pressure upon the gums produced the most copious discharge of pus from the socket of every lower tooth. Her dentist had informed her that all treatment for the preservation of these teeth would be useless, and that their loss was only a question of a short time. She came to me in order to find out whether I could give her any reasonable hope for the preservation of her teeth. The patient was thin, emaciated and careworn in appearance, and I was at once forcibly reminded of the anæmic condition present from the extreme pallor of the gums, lips and eyes. After a careful medical examination had been made the functional disturbance was narrowed down to uterine troubles and she placed herself under the care of Dr. H. N. Vineberg, who furnished me with the following resume of her condition and subsequent operation:

"January 13, 1897. Patient first consulted me. Has had uterine trouble for the past fifteen years. Has been treated from time to time, with temporary relief. In addition to pain in the right groin, back and down the right thigh, she suffers from frequent micturition. Examination disclosed the right kidney prolapsed to the line of the umbilicus. Uterus in retroversion of third degree. Right ovary prolapsed and enlarged to the size of an English walnut. The cervix hard, covered with erosions, and enlarged nabothian follicles. She was removed to a hospital and on February 3, 1897, a laparotomy was performed. Removed right ovary and tube. Ovary size of an English walnut and cystic throughout. Left tube and ovary apparently normal and left intact. Removed a small fibroid in anterior wall of the uterus. Sutured defect in wall of uterus with catgut. Ventrofixated uterus with two catgut sutures. Recovery uneventful, primary union of abdominal wound. March 6, uterus in good forward position, health excellent."

After the patient returned home in the spring of 1897 local treatment was instituted with the most satisfactory results. All concretions being removed from the roots, one application of a twenty-five per cent. solution of trichloracetic acid introduced into the pyorrheal pockets of not over two teeth at a time was sufficient for the thorough healing of each pyorrheal pocket. Since then the patient has given especial care to proper attention to hygienic measures, not only local but general; and as a result her general condition has visibly improved, so that she has lost the careworn expression and has gained materially in avoirdupois. There is a large quantity of salivary calculus that deposits on her teeth, and which has to be removed about every four months, but there has been no return of any distinctly pyorrheal condition.

A frequent complication of any form of pyorrhea alveolaris is an alveolar abscess. This is not only very prone to occur but is very difficult of diagnosis, and rarely suspected, because the purulent discharge from the abscess finds a direct vent through the pyorrheal pocket. On this account it is essential in the successful treatment of this trouble to be always assured that the vitality of the pulp is unimpaired, and, if there is any question as to its vitality, it is far better to remove a living pulp from such a tooth than to incur the risk of having the pus from an alveolar abscess constantly draining through a pyorrheal pocket, which, under such circumstances, you are ineffectually attempting to close up.

It has often been cited by advocates of the theory that all conditions of pyorrhea are purely local diseases; that the extraction of the teeth is sufficient to cure the disease. Never having heard this bold statement contradicted, I take this opportunity of stating that numerous cases of pyorrhea have come under my observation where the removal of the tooth in the diseased socket was not in itself sufficient to cure the disease in the socket.

It has been my aim to call your attention to the fact that, leaving pyorrhea simplex aside, the forms of pyorrhea complex that we may meet are only limited by the number of ills that humanity is heir to. Attention is also invited to the fact that each form of pyorrhea complex presents clinical symptoms so separate and distinct that they can easily be recognized by the observant dentist. His duty is to call the attention of his medical confreres to their diagnostic value in incipient functional disturbances.

Treatment: It is not my attention to consider extensively the details of local treatment, except to state some special forms of practice which have perhaps been distinctive with myself.

The necessity for a careful removal of every form of deposit, although disputed by a few, has been recognized to be of primary importance by the majority of men who treat this trouble. Your attention is called to the danger of handling too many teeth at one sitting and producing too much irritation instead of benefiting the patient. The form of escharotic used matters but little as long as the superficial tissues of the pocket are thoroughly removed and the parts stimulated without undue severity. They should always be left covered with some soothing application which should tend to keep the entrance to the pockets sealed for as long time as possible. A favorite application with myself has been the following prescription, which is not original:

Purified gum. lac.	135.0
" benzoin	5.0
Carbol. acid cryst.	50.0
Oil cinnamon,	3.0
Sacchartne,	3.0
Alcohol,	q. s. to make ½ litre.

By allowing this to dry for a few moments it will be found to keep the pockets sealed for many hours as well as being beneficial from its therapeutic properties. So much has been written in reference to the nicety of detail as regards localized treatment that it is almost safe at the present day to say that the treatment of any individual case from a local standpoint must be left to the good judgment and sound common sense of the dentist who has the case in charge. An even occlusion of each and every tooth in the jaws is a *sine qua non* for success. The most difficult cases where other conditions have been made favorable are those where so much of the alveolar process has been lost that there is very little attachment left to keep the tooth in its socket. In many cases what attachment remains can frequently be improved by removing the pulp from the tooth by means of cocaine anæsthesia and thus diverting the portion of the circulation which has been nourishing the pulp to the pericemental tissues. This is, of course, only of value where there is a decided lack in the nutritional supply of the capillaries feeding the pericemental tissues; and nowhere does the good judgment of the operator come in more demand than when he determines that this course of procedure should or should not be pursued. Much has been written in the last few years about the value of splinting teeth which are too loose to stand unsupported in their own sockets. For temporary purposes ligatures, whether of silk, flax or metal, are valuable, but their durability is only a question of time, however skillfully they may be employed, and frequently much harm is done by the imperfect manner in which they are adjusted. No more injudicious treatment can be imagined than a practice which has been only too common—that of banding loose teeth together in order to obtain the benefits of this support. It is well nigh impossible to place bands around teeth without making them receptacles for the lodgment of debris and fermentable matter and consequently nests for the better breeding of the already too numerous bacteria. In a paper previously referred to, published in the *Dental Cosmos*, of March, 1888, I described a method of splinting teeth together by means of a combination of triangular wire lying in a groove cut in the occlusal portions of the teeth and held solidly in position by gold foil packed solidly under, around and on top of the wire, restoring in this manner the original conformation of the teeth except that the gold filling follows the triangular piece of iridio-platinum wire across the interspaces so that the teeth are solidly joined together at the occlusal angles. When a tooth is missing, or even a portion of a tooth, this can be attached to the wire before being permanently fixed in position.

While no false hopes of success should be held out to patients where the prognosis is of such a nature as to see the futility of much treatment, still, all our treatment is rendered unavailing unless considerable attention be given to the fact that constant co-operation is required from the patients themselves so far as the local treatment is concerned. They must be taught like children how to care for the oral cavity so as to insure the best hygienic condition attainable at all times. The same advice and teaching is not always applicable for all cases; and here again enters the question of the sound judgment and good advice of the dentist under whose treatment the teeth have been placed.—*Dental Review.*

ARTICLE IV.

EXTRACT FROM AN ARTICLE UPON "SOME OVERLOOKED SOURCES OF INFECTION.

M. L. DYER.

Uncleanliness in dental surgery need only be mentioned briefly in passing, since all discussion of the subject should be politely suggested, alluding as it does to a profession which consists of scientific men who are already somewhat sensitive upon the question of their relations to the medical profession. It is not my intention, however, to direct attention to this desire on the part of some of these gentlemen to be ranked as specialists with the oculist and the aurist and the gynecologist, but rather to the fact that in dental offices in general, or, to put it more mildly, in a very large proportion of dental offices throughout the country, there is a marked negligence in the proper care and sterilization of instruments and appliances. Numerous instances of infection from this source have been traced, and many cases of necrosis and subperiosteal abscesses, to say nothing of constitutional infection, have been among the deplorable results of unclean dentistry. That such results are inexcusable goes without saying, and the mere invitation to extreme care in their work, given on the part of the medical profession, should be all sufficient to cause dental surgeons everywhere, to adopt thorough and complete aseptie methods for the most trivial operations. If not, then let it be made a penal offense to thrust into the soft and highly absorbent tissues of the human mouth, forceps that have recently been polluted by the festering jaws of the scorbutic, the cankerous or the syphilitic, and only cleaned by a more or less careful wiping with a piece of absorbent cotton. A careful and extensive injury reveals the fact that in the great majority of dental offices in California, except in cases of suspected disease, instruments are seldom surgically cleaned, either before or after operations. No surgeon nowadays would lance a boil, or cut for a sliver, without being sure of his bistoury, and no dental surgeon should pull a tooth or incise a gum without equal care.—*Western Dental Journal.*

ARTICLE V.

DO MEDICAL COLLEGES STRIVE TO THOROUGHLY EDUCATE THEIR STUDENTS?

G. LENOX CURTIS, M. D., NEW YORK.

In considering this subject, especially during the past year, I have reached the conclusion that these institutions are conducted largely for personal gain and aggrandisement, and any innovation which might tend to defeat their purpose is frowned upon to their discredit, and to the detriment of their pupils. If knowledge is the acme of education why do not the presidents of colleges see that men best fitted for certain positions are placed in them? Is it because their own prominence depends on those members of the faculty who oppose investigation and research of new methods set forth by an unassuming practitioner, who has spent his hard earned dollars and years of his life in original investigation? A new theory, backed by scientific experiments, is rarely favorably received, unless advanced by men at the head of the profession—to follow whom is the fad of the day.

The medical profession is full of young men who have for years been working on original subjects with astontshing results, but fear of failure of recognition and unjust criticism have prevented them from making public their discoveries. If American colleges would cast politics aside, and open their doors to such investigations, this country would lead the world in medical science. Could this condition exist, the tide of students flowing to European colleges would be turned, and foreigners would finish their education in America.

What Koch so ignominiously failed in, the treatment of tuberculosis has been accomplished in America, but the profession frown upon the treatment, and compel the discoverer to retreat into the background, and to seek irregular methods for making known his discovery. In the search of the blood for diseases of the body new methods have been evolved. By these methods we are shown that the natural secretions of the body yield signs of early and obscure disease, which the methods now in vogue fail to bring to light except when the disease is far advanced and often toy late to save life. The art of instantaneous microphotography is partially responsible for this new method as it demonstrates what the naked eye cannot see, and even shows such objects as the tubercular bacilli and the spores of syphilis floating in the serum of the blood. It would seem that every disease has its distinct representation in this organ. This can be discovered when the disease is in embryol and treated before the general system is impaired. How many physicians there are who are at their wits end to know from what their patients are suffering, because the disease is not sufficiently developed, who would gladly hail the knowledge which would lead them to a solution of the problem. The examination of the blood is nothing new, but the examining and photographing the fresh blood witnin a few seconds from the time it is drawn from the circulation is new. By this process the disease may be found before pathological change has been produced, and yet the discoverer of this method cannot have the advantage of a college laboratory because he has not a pull with the faculty. To get recognition in

America for discoveries like these it would seem necessary to first take them to Europe and have them returned with a foreign label.—*Dominion Dental Journal.*

Article VI.*

CONCERNING FEES.

By B.

If we would only stop to compare some of our professional fee customs with the customs of the plumber, we could learn something from the latter. For instance, the plumber's charges for "time" begin the moment he leaves his shop, and saunters to your house. He is "a gentleman of leisure." Every step he takes towards you means a debit in his books, and he is distinguished for the slowness of his steps. Intensely so, he is a strict adherent to the custom of charging for "time," and while he gossips with your cook, or strolls back to his shop for a forgotten tool, his bill runs on all the same. If you examine his bill the "details" amaze you. Every screw, tack, bit of solder, etc., are enumerated. You need not imagine that he will overlook anything or give any of his time, experience or materials for nothing.

But we who are incorporated by law as one of the liberal professions, carry out our liberalism more liberally. Time, experience, and materials are given repeatedly without any request for compensation. Patients treat us with a superciliousness they would not dare show to their plumber. People who expect to be charged the uttermost farthing for every moment of time, and every scrap of material used by the man who is down in their drains, expect the same from the dentist gratis. Indeed it seems to me, as if many dentists act as if they were obliged to apologize to their patients for charging them at all! "I never charge physicians anything," said a confrere to me. "And does your physician charge you?" "Oh! yes," he replied, "but somehow or other I got into the way. Did any one ever hear of such insanity?

A case came to me several months ago which will illustrate, not only the hereditary mischief done in this way, but the unadulterated gall and ignorance of a certain class of the public. A pompous patient sailed into the office, and dictatorily wanted an appointment to have a tooth filled. "I had it attended to by Dr. —— and he botched it, and I had to get the filling out. Dr. —— then filled it again, and he's another botch. I just want you to fill it again." I explained to her that both of the gentlemen she libelled were among our best and most experienced dentists; and that she doubtless was to blame in not letting them treat the tooth as they probably wanted to treat it. "Oh! I don't believe in that at all; if a tooth is filled properly it oughtn't to ache." I told her that proper treatment of the roots was necessary; that it would be an expensive experience financially that might or might not succeed, but she replied in her superior way, "All I want you to do is just to fill up the cavity again, and I'll try it." I acceded to her desire under protest, and conditionally, that if my prophetic assurance of trouble was fulfilled, she would at once return. She returned and made an appointment for the purpose of extraction, or beginning the treatment, which ever she would decide upon. She did not come back, but suffered exactly what I predicted, and then placing me and my reputation among her choice list of "botches," she went to another dentist. By that time she had concluded to let the dentist be the judge of the proper way to manage such a tooth, submitted to an expensive treatment and had the tooth saved. This is one of the many cases which provoke us in practice, but which we cannot deal with, simply because we do not get the chance.—*Dominion Dental Journal.*

Communicated.

EDITOR "AMERICAN JOURNAL OF DENTAL SCIENCE:"

NEWARK, N. J., May 25th, 1899.

The Sixteeth Annual Session of the National Association of Dental Examiners will be held at Niagara Falls commencing at 10 o'clock a. m., Friday July 28th, and continuing the 29th, 31st and Aug. 1st, 1899. The Hotel and Hall where the sessions will be held, will be given in the July number of this Journal. It is earnestly desired that delegate members from every state will be represented this year.

CHARLES A. MEEKER, D. D. S., Sec'ty.

NATIONAL DENTAL ASSOCIATION

The Annual Meeting of the National Dental Association will be held in the ball-room of the International Hotel, at Niagara Falls, August 1, 2, 3 and 4, 1899.

A railroad rate of one and one-third fare on the certificate plan will be obtained. Also reduced rates on C. & B. and Northern Transportation S. S. Lines. It is suggested that members living at a considerable distance organize parties, and thereby be enabled to secure lower rates from railroad companies.

Following is a list of hotels:

Cataract House, . . .	$3.00 to $4.00	per day.
International Hotel, . .	3.00 to 4.00	"
Kaltenback Hotel, . .	3.00	"
Imperial Hotel. . . .	2.50 to 4.00	"
Columbia Hotel, . . .	1.50 to 2.00	"
Temperance House, . .	1.50 to 2.00	"
Niagara Falls House, . .	2.00	"
Niagara House, . . .	2.00	"

Dr. M. O. Cooley, of Niagara Falls, N. Y., will engage rooms and answer any questions regarding local arrangements for the meeting. Definite meeting places for sections will be announced later.

It is the wish of the officers of the Association that members make special efforts to be present at section meetings, on account of the unusual number of valuable papers which must first be passed upon by the section to which they properly belong.

The following is the preliminary program:

Porcelain Enamel Inlays, Dr. N. S. Jenkins, Dresden; Orthodontia, (Illustrated), Dr. Edward H. Angle, St. Louis; The Absolute Efficiency of the Controllers of the Market for Dental Cataphoresis, Dr. W. A. Price, Cleveland; Dental Electricity, Dr. L. E. Custer, Dayton; The Practical Side of It, Dr. S. S. Stowell, Pittsfield; A Bastard Profession, Dr. E. P. Beadles, Danville; Surgical Operations in Early Infancy for Palatal Defects, Dr. Truman W. Brophy, Chicago; Cements, Dr. E. K. Wedelstaedt, Minneapolis; The Reflexes of the Three Lower Molars, Dr. James Truman, Philadelphia; Operative Dentistry, Dr. J. N. Crouse, Chicago; Gomphosis, Dr. B. H. Catching, Atlanta; Prognathism. Extraction and Delay versus Expansion and Early Attention. (Illustrated), Dr. R. Ottolengui, New York; Some Phases of the Cement Question, Dr. W. V. B. Ames, Chicago; A Study of Hare-Lip and Cleft Palate, (Illustrated), Dr. Thomas Fillebrown, Boston; Dies and Counter-Dies, Dr. Robert H. Nones, Philadelphia; Phyorrhœa Alveolaris, Dr. M. L. Rhein, New York; Constitutional Deterioration the Cause of Dental Caries, Dr. Harvey, Battle Creek; Oral Affections in Secondary Syphilis, Dr. W. C. Barrett, Buffalo; The Physiological Relation of the Adult Tooth-Pulp to the Economy, Dr. C. L. Hungerford, Kansas City; Etiology of Gnathic Abnormalities, Dr. A. H. Thompson, Topeka; The Dental Profession in Charity; an Experiment in Chicago, Dr. Carl Theodore Gramm, Chicago; Some New Points in the Anatomy of the Face and Jaws, Dr. M. H. Cryer, Philadelphia; An Important Paper, by Dr. J. Leon Williams, of London.

SUBJECTS TO BE ANNOUNCED.

Dr. W. Geo. Beers, Montreal; Dr. H. L. Ambler, Cleveland; Dr. Joseph Head, Philadelphia; Dr. John S. Marshall, Chicago; Dr. A. H. Peck, Chicago; Dr. R. H. Hofheinz, Rochester; Dr. G. V. I. Brown, Milwaukee; Dr. H. H. Johnson, Macon; Dr. C. Edmund Kells, New Orleans; Dr. L. M. Cowardin, Richmond; Dr. L. L. Dunbar, San Francisco; Dr. G. V. Black, Chicago; Dr. W. H. Whistler, Cleveland; Dr. A. W. Harlan, Chicago; Dr. C. N. Johnson, Chicago; Dr. H. J. Goslee, Chicago; Dr. F. W. Low, Buffalo; Dr. T. P. Hinman, Atlanta; Dr. B. Holly Smith, Baltimore; Dr. M. C. Smith, Lynn; Dr. Edward C. Kirk, Philadelphia; Dr. W. Ernest Walker, Pass Christian.

A revised program, with reports from chaiman of sections, will be issued later. Prominent members of the profession from abroad have been invited to be present.

The names of the gentlemen who have promised to present papers is a sufficient guarantee of the high character of work which will be done at this meeting. The minor details will be carefully looked after, and all unnecessary and irrelevant matter eliminated, so that the business of the Association may be transacted in a prompt and expeditious manner. It is hoped that the various state Societies will send full delegations, and that all members of the Association, and reputable dentists in this country and Canada who are not members, will show their interest in and loyalty to the National Association by attending this meeting.

H. J. BURKHART, President.

EMMA EAMES CHASE, Cor. Secretary.

J. N. CROUSE, Chairman Ex. Committee.

Bibliographical.

A DICTIONARY OF DENTAL SCIENCE AND SUCH WORDS AND PHRASES OF THE COLLATERAL SCIENCES AS PERTAIN TO ART AND PRACTICE OF DENTISTRY.

CHAPIN A. HARRIS, M. D., D. D. S.

Sixth Edition, Carefully Revised and Enlarged by Ferdinand J. S. Gorgas, M. D., D. D. S., Author of "Dental Medicine;" Editor of Harris' "Principles and Practice of Dentistry;" Professor of Principles of Dental Science, Oral Surgery and Prosthetic Dentistry in the University of Maryland.

Philadelhhia, P. Blakiston, Son & Co., 1898.

Nothing is more important to both student and practitioner than a reliable, scientific, up-to-date dictionary. The different editions of Harris' dictionary of Dental Science are part of the history of the profession.

In the sixth edition, Prof. Gorgas has given to us the result of the last seven years of work. The book is greatly enlarged by the edition of thousands of words for which purpose he has delved freely into the allied sciences wherever their services are brought into use by the dentist. The only criticism that can be made of this work is that Prof Gorgas has not kept within the bounds of a dictionary, simply a description of words and phrases, but strays freely into the paths that belong to works on practice and therapeutics in describing treatment and remedies. In the condensed form in which this must be done in a work of this chrracter, it may easily be productive of more harm than good.—*Items of Interest.*

Monthly Summary.

DR. BLACK'S THEORY.—Dr. Black says that all teeth are equally soft; that the dentine of all teeth are the same in density; that they have the same specific gravity; that a good tooth is no better than a bad tooth, that any filling material that will save one tooth will save any other, and that there is no choice except on the part of the dentist between lead or tin or gold or amalgam. Well, now I do not believe that bad teeth are always bad. I do not believe that teeth that are bad in the beginning are bad all through life. I am honest in being mistaken, if I am mistaken, but I believe I have seen changes in the teeth of some of my patients. I call to mind a patient who for ten years suffered from caries of the teeth. He was then leading a sedentary life. He changed his occupation, becoming a railroad man, thus securing plenty of air and exercise. His teeth required constant care. Now he will go sometimes for five or six years without a single cavity in his teeth. He is an unprofitable patient because his teeth do not require any care. Dr. Black would say that they could not change for the better.—Dr. Erwin T. Darby, in *International.*

DENTIFRICE SOAP.—Thymol, 25; extract of rhatany, 100; warm glycerin, 600; calcined magnesium, 50; borax 400; oil of peppermint 100; medicinal soap, q. s. to produce 3,000. Dissolve the thymol and extract of rhatany in the warm glycerin, and add the other ingredients, mixing thoroughly.—Form of *Bull. Gen. de Ther.*

SUPRAORBITAL NEURALGIA.—Recently a patient who was suffering from supraorbital neuralgia accompanied by intense injection of the conjunctiva was referred to me by an oculist for examination of the teeth. There was no dead pulps on that side of the mouth. No cavities in the teeth which were not already filled—most of the fillings being small. There was one large amalgam filling in the second superior molar which was removed, but the pulp was not exposed. From repeated tapping on this tooth, the injection of hot and then cold water, I decided that the responses were sufficient to justify the destruction of the pulp. This was done with arsenic and after forty-eight hours the pulp was removed, the lingual root being found calcified one-third of its length from the apex of the root. That night the patient suffered from a retinal hemorrhage, from which he recovered in about two weeks. The neuralgia ceased and the injection of the conjunctiva disappeared within two weeks and has not returned. Was the calcification of the pulp the cause of the neuralgia?—*Dental Review.*

THE INSERTION OF DENTURES.—I do not think the dentist is justified in allowing his patient to remain for even a period of three months after furnishing his mouth without furnishing it again; he loses to a great extent the original facial expression, and it takes a much longer time to become accustomed to the feel of denture than if it were inserted as quickly after the extraction of the teeth as possible, setting aside the inconvenience and impairment to health through being deprived of his dental armature.—H. Rose, "Brit. Jour."

TO CLEAN AN OIL-STONE.—Smear a flat block of wood with glycerine and fine pumice and rub the stone, face down, till all traces of previous usage have disappeared. This will greatly improve the working qualities of the stone. To *ruin* an oil-stone, clean it with kerosene.—*Odontographic Journal.*

DOES LICENSE TO PRACTICE MEDICINE PERMIT THE PRACTICE OF ORAL SURGERY.—A curious case for medico-legal decision has arisen in the State of Rhode Island, where registration for medical practice is granted upon application to the State Board of Health by graduates of recognized medical colleges, while dentists are required by a recent enactment to pass an examination before the State Board of Registration in Dentistry. A graduate in dental surgery, and in medicine, after having been registered by the State Board of Health, and securing his license, engaged in the practice of medicine, including dental and oral surgery. He was forthwith arrested for infraction of the law requiring examination and license for the practice of dental surgery, and the case now awaits judicial decision. Logically it would be reasoned that one qualified to practice medicine and so authorized to do by State authority, would at the same time be conceded the qualification and the license to practice any part of medicine, ophthalmology, otology, obstetrics, gynecology, oral and dental surgery, etc. To ask a qualified and licensed medical man to pass a special examination in oral and dental surgery, would not be more ridiculous than to ask him to pass a special examination and secure a special license for the practice of midwifery. It would seem, further, from the legal point of view, that when there is conflict in letter between existing legislation the spirit must be followed, and surely no one would contend that the part is greater than the whole. The question in Rhode Island seems a very simple one, and the solution should be attended with no difficulty or complication. It all revolves about the point whether an approved graduate in medicine shall be permitted to practice all branches of it.—"Dominion Dental Journal."

SOLDERING GOLD CROWNS.—Make a saturated solution of borax by boiling, until no more will dissolve. When the solder is wanted to flow, moisten with this solution, and it will run like a flash. Mix yellow ochre to a creamy consistency for painting the parts to be protected from solder.—J. T. Usher, *Cosmos.*

CINNAMON WATER AS A DRESSING.—The limited use of cinnamon water as a dressing for wounds caused me to give it an extended trial in my Bellevue clinic. The strength of the solution used was eight drops of the pure oil to a quart of water. This solution was used to syringe the parts and was applied to the dressing by the patients at home. In all minor surgical cases of recent wounds (tested in hundreds of cases) it can certainly be relied upon to take the place, fully, of that malodorous drug, iodoform. In burns of the first and second degree it never failed. The same with infected wounds. The dressings were changed every other day.

Case 1. Nellie G. received a severe lacerated wound of the wrist, severing both radial and ulnar arteries. A soiled towel was at once applied as a compress. After ligating the arteries, the wound was cleansed with the solution of cinnamon, and the patient instructed to keep the dressing constantly moistened with the same. The treatment extended from April 3 to June 15. Result, cured.

Case 2. Bridget K. severely burned on the right shoulder and one-third the distance to the elbow. The dates in this case are wanting. Writing from memory, the time consumed in this case was about three weeks. The patient pleaded very earnestly for a salve, but with much persuasion was induced to continue the treatment, with a most satisfactory result. Should any of your great army of readers have an untried agent which they wish tested, I will be pleased to use it for them and report. In conclusion I would say that I intend trying the oil of pepperment and gaultheria.—F. Soper, M. D., in "Dental Review."

TO MEND a plate temporarily, where a tooth or section has beee broken off leaving the pins in the rubber, wash the exposed surface thoroughly with soap and water and then with chloroform after drying thoroughly. Coat the surfaces with a mixture of equal parts of gutta-percha and resin, dissolved in chloroform lay a thin piece of gutta-percha over the broken surface of the plate, heat over a spirit lamp and press the tooth or section to place.—"Indiana Journal."

EPILEPSY.—The writer has never yet seen a case of so-called idiopathic epilepsy in which the kitchen did not figure. Of course there are other causes, but indigestion and malassimilation are the roots of evil in the great bulk of cases. It is remarkable how a series of seizures is cut short by the thorough cleaning of the alimentary tract.

In over a hundred cases taken at haphazard, not one was found in normal nutritive condition; forty per cent. of the stomachs were diluted, ninety per cent. of the alimentary tracts were more or less catarrhal.

Those who have dealt with epileptics will recall how frequently hemorrhoids and prolapse of the rectum are met with; and how prone they are to scorbutic taint. Almost without exception epileptics have weak, irritable, rapid hearts, showing simply a lowered vitality.—"Surgical and Dental News."

TOBACCO chewers' teeth wear away on the grinding surface rapidly, caused by the gritty substance naturally entering into the tobacco. The gums recede and are red and congested, and underneath the gum a narrow line of dark tartar is nearly always present and particles may be found still further towards the apex of the tooth I am now convinced that tobacco chewing does cause decay of the teeth, especially at the gingival portion of the teeth in the locality in which the cud is held; this is due to the formation of acids produced by the sugar or licorice used to flavor the tobacco.—Dr. John G. Harper, in *Digest.*

THERE is one thing, if not more, that carbolic acid seems to do better than anything else and that is the destruction of an abscess sack. Other caustics may do very well, but carbolic acid is excellent. It is not time yet to discard this remedy.—*American Dental Weekly.*

SUBSTITUTE FOR RUBBER GLOVES.—We all know tha in warm weather rubber gloves cannot be worn with comfort while engaged in prosthetic work; to subserve the same purpose the following suggestions for an ointment is taken from the "Medical Brief": "In the warm days that are now before us, when a rubber glove cannot be worn with comfort while engaged in prosthetic work, an ointment of honey for the hands will subserve the same purpose. It holds the dirt in suspension and dissolves very quickly when immersed in water. leaving the hands soft and clean. Take clarified honey and rose water, of each one pint, listerine two ounces. Mix and bottle. For winter use, add two or three ounces of glycerin."—"Int. Dental Journal."

TO TREAT the root canals of posterior teeth when the walls are broken down so badly that the rubber dam can not be adjusted, proceed as follows : Prepare the tooth as for a permanent filling, fill the pulp chamber with SSW dressing seal, allowing the filling to project from the pulp chamber as far as occlusion will permit. Build a wall of amalgam around this and at a subsequent sitting adjust the rubber dam, remove the seal and proceed with treatment.—*Indiana Journal.*

GUM sections in prosthetic dentistry are like chromos in art, they are all made in the same mold. There is no possibility of choice in the manner of setting each tooth to give it an individuality, indicating the character of the man, giving a little twist here, a little turn there, some a little longer, some a little shorter, individualizing the later especially, securing the proper relations of each tooth to the lips and the face.—Dr. Freeman, in *Headlight.*

BRIDGE OR PLATE?—If you have a tooth likely to last several years, it is better to have a small crown or bridge than to use an artificial plate and run the risk of injuring several teeth.—Dr. Whittaker, in "Jour. Brit. Asso."

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, JULY, 1899. NO. 3.

Selections.

ARTICLE I.

MERCURIAL NECROSIS RESULTING FROM AMALGAM FILLINGS.

BY J. Y. TUTHILL, M. D., BROOKLYN, N. Y.

Read before the Medical Society of the County of Kings.

Mercurial necrosis is a fiield of pathology which has not received the investigation it deserves by the medical profession. While the poisonous effects of mercury have so long been recognized that I need take no time in rehearsing them, yet there are certain causes affecting the nerve centers which demand more thorough investigation than has yet been given.

In presenting this subject to the Society for consideration I want to show that by the use of amalgam in filling teeth there is a possibility of mercurial poisoning, which seriously affects the nerve-centers, impairs locomotion by heaviness of limb and stiffness of joint, gives rise to obstinate diseases of the skin, and makes a mental wreck of its victim, whose imaginations and hallucinations are more than my pen can describe.

Physical examination reveals nothing to assist the physician in making a diagnosis of his case, as all the functions are usually well performed. There is, however, nervous depression, irritability, unreasonableness, an inability to overcome and throw off feelings of oppression which settle upon the patient and hold him as in the clutches of despair until his ambition is broken, his energy is gone, his purpose is lost, and he drifts for lack of power to concentrate his actions and assert himself as a force in the world. There are shifting, shooting pains here and there from head to foot, affecting sometimes one part and then another; numbness of hand, foot, or jaw, heaviness of leg, arm, or head, with an almost inability to move them, and a feeling as though one would fall or lose consciousness. Again there is a light, floating sensation as though moving in air. There is mental excitiability as well as mental depression; perplexing events cause the highest degree of excitement, ordinary conversation sometimes causes complete confusion, headache, palpitation, intense solicitude, and anxiety, without reason for it. Such are some of the symptoms attending these cases.

To bring this pathological condition more clearly to your thought, allow me to cite a few cases which have come under my observation during the past few years, and you will pardon me for alluding to my own individual case which first opened my eyes to this subject.

During the winter of 1884 and 1885, when working far beyond the limits of good judgment, and averaging from October 15th to April 27th, not more than from four to four and one half hour's sleep per night, I was attacked February 1st with neuralgic and rheumatic pains, usually short in duration, lasting from ten to fifteen minutes to three or four hours, affecting chest, back, arms and legs. My work was arduous, and the professional demands upon my time and strength prevented my getting adequate rest.

With failing strength and energy, I continued my daily routine of work until April 27th, when I was in a state of physical and mental collapse. I sought a quiet place for rest, and April 28th went to Saratoga Springs. Arrived there at 3 p. m., and in a half an hour was in bed. I had a good night's rest, and after breakfast the following morning took a stroll through the village, which at this season of the year is the sleepiest place of its size that I know of. Then, thought I would write home news of my safe arrival and a good night's rest. But never was I more surprised than to find that I could not write more than two or three words when my hand would be so numb that I could not hold the pen, until I had rubbed it for some minutes. The same processes were repeated over and over again until I succeeded in writing a short letter. This condition continued, with some abatement, for many weeks and, in much less degree, for years following. I remained in Saratoga for ten days, sleeping thirteen and fourteen hours in every twenty-four, then returned home and resumed practice feeling much improved.

An eruption which appeared like psoriasis, and which had troubled me for several years, became more troublesome and refused to heal, much to my annoyance and chagrin. All the foregonig conditions continued up to the spring of 1889, when a persistent headache, often of neuralgic character, continued for two or three months was relieved by taking a four months' trip abroad.

Since that time I have had average health, with occasional numbness of hands. The handling of steel would almost paralyze my hands for some minutes to come. The eruption continued the same, resisting all treatment that my own ingenuity could devise or that my professional brethren, who took a kindly interest in my case, suggested

The numbness attended with pain in the fingers, was thought to be a form of gouty neuritis. Following their advice, I took such remedies as they prescribed, sometimes it seemed for the better, but with no permanent improvement.

In the summer of 1895, spending the month of August on the Shawangunk Mountains, I was applying to the eruption several times a day, a lotion of bichlorid of mercury, which accomplished more for healing than anything I had ever used; but while the eruption was fast getting better, my hands were rapidly losing their power and I could not rely on holding anything, nor could I pick up small things like pins, needles, or twine, because of the numbness. At this juncture, it occurred to me that I was absorbing mercury, and that mine was a case of mercurial neuritis or paralysis, the result of this absorption, and that the eruption was a mercurial psoriasis. Returning to the city I laid the matter before several physicians, who thought I was mistaken, as my gums showed no evidence of mercurial poisoning, and on their advice resumed the use of the bichlorid loition, but was compelled to abandon it in a few days because of numbness which followed. I reported my condition. They then agreed with me that the mercury affected my system in an unusual manner, but thought that I had an idiosyncrasy, and that it would probably not affect more than one in a thousand under the same circumstances.

Being thoroughly aroused as to my state, and having several amalgam fillings in my teeth, I soon came to believe that my entire condition, the numbness, the rheumatic pains, and the eruptions were all due to the action of mercury absorbed from those fillings. So I decided to have them removed, and the work was done in May, 1896. In two weeks I felt like another man; it seemed as though a great weight had been lifted, and I was once more free from an oppression which had hung over me like one long nightmare for years, handicapping, restricting, and restraining me on every hand.

My improvement has continued from that time to the present, the numbness growing less and less, the eruption disappearing until there is less of it than at any time in fifteen years.

I do not magine that all the mercury that I absorbed from those fillings which I carried or thirty-eight years; is out of my system, but from my general improvement, believe it is growing less all the time, and I am feeling better than at any time since the spring of 1885. Having lived for eleven years on the ragged edge of hope and despair, and thus secured by freedom from a bondage worse than human slavery, I could appreciate the sufferings of others when they rehearsed experiences which I had realized. As a natural consequence; I readily recognized the same enemy to their peace and happiness which had shattered my own.

In December, 1896, I was called to see Miss F., aged thirty-three years, who had been in excellent health previous to an attack of la grippe in December, 1892. Since then her nervous system had been much disturbed, and she had come to be melancholic and to withdraw herself from her family and friends, seeking the seclusion of her room—refusing to go out or to associate with others, or even with the members of her own household. When I was called, she had been treated by five different physicians with no improvement. I treated her for indigestion, torpid liver, constipation, etc., for ten weeks, with no improvement in her mental condition. Then numbness of hands and stiffness of jaws led me to examine her teeth, when I found five amalgam fillings which I believed had produced a mercurial neurosis. I gave it as my opinion that her condition was due to the effect of mercury upon her nervous system absorbed from those fillings and advised their removal. She was stubborn and for some time refused, but yielded in May, 1897, and had the work done. She has steadily improved since that time, and her family say that she has not been so well in five years as now.

Case 2. In the early part of last September, Miss E., aged eighteen, was brought home from a three-months sojourn in the country, with all the indications of typhoid fever. Intestinal antiseptics, tonics, etc., arrested the progress of the case, but an unaccountable languor, debility, loss and flabbiness of flesh with drowsiness, continued for several weeks, she sleeping eighteen and twenty hours out of twenty-four. My case otherwise appearing well, her sluggish gait, heaviness of limbs, and stiffness of jaws, led me to examine her teeth, in which I found nine amalgam fillings. Being convinced that these were retarding her recovery, I advised their removal and the substitution of gold. When the fillings were taken out she became more wakeful and animated, and has continued to improve although still suffering from the effects of the absorbed mercury.

Case 3. Miss K., a young lady of culture and refinement, was brought to my office December 1st, 1887, suffering from extreme nervousness, which had continued for three years. She was restless and could not apply herself for any length of time to any one thing, sleepless, irritable, hysterical, etc. Having made a thorough examination of her case and being assured that all her functions were normal, I examined her teeth and found sixteen amalgam fillings, several of them in teeth containing gold fillings. Believing this to be a case of mercurial neurosis I told her, and her mother who accompanied her, that the case put me in mind of what I had read in "Ziemssen's Cyclopædia" a day or two previous on mercurial poisoning, and I read to them, viz.: "Essentially the condition is characterized by great mental excitability of the patient to external impressions. Every unexpected or perplexing event excites him in the highest degree. The visit and the conversation of the physician put him into a state of complete bewilderment, even to syncope; the adult patient grows pale and stammers in answering the simplest questions. To perform his allotted task requires the greatest effort, or is even impossible if he sees or thinks he is being watched. There is also great solicitude and a feeling of anxiety without any reason for it. There is sleeplessness, or sleep which is restless, frequently broken and disturbed by frightful dreams, headache and papitation. In the severer forms there are frequently hallucinations, usually of a frightful nature. When perplexed or excited, traces of tremor are often perceptible in a slight twitching of the muscles of the face at the corners of the mouth." Having heard this, she remarked that it was a perfect description of her case in every particular, except that she had not had the hallucinations there mentioned. Following my advice the fillings were removed and the young lady has improved very rapidly to the present time, all her nervous feelings having disappeared. Indeed, her mother tells me that she manifested none of her nervous troubles since the removal of the fillings.

Case 4. In February, 1897, was called to see Mrs. N., who was extremely nervous, with neuralgic pains in the chest and palpitation of the heart. Upon looking up she felt as though she were falling backward. Had heaviness of limbs, loss of memory, and found it difficult to think and harder still to put her thoughts into words. Numbness of hand or foot, a sensation of floating, and a feeling that she would die, were common experiences. I did not see her many times before I examined her teeth, and found one large amalgam filling in a lower molar, which I advised her to have removed, but doubting its necessity she kept it until November. Here I wish to read a letter sent me several weeks ago:

DEAR DR. TUTHILL:

"I wonder if there is another woman in this world who has had all the peculiar feeling that I have had within the past two years? You know that I am one of the healthiest-looking mortals, have good appetite, sleep fairly well, etc., yet for all this time I have suffered from such awful feelings. I was afraid to go out alone, or be alone, and in constant fear that something dreadful was about to happen. I suffered much from palpitation. Sometimes, when sitting in a street-car, the people would suddenly begin to look queer, the car crooked, and I would look around at each one to see if any one realized the dreadful condition of things. I had also light, floating sensations, and at times it was hard to talk, to think, and speak in sentences. When lifting my eyes upward I felt as though I were falling backward. Then my limbs were so heavy, my memory seemed to be gone, and I often felt dazed. Even when conversing with friends, or sitting at the dining-table, such a horrible feeling would suddenly seize me and I thought that in a moment I might fall down dead. I became hot and cold and sick, and would have to rise and walk about till it passed over. The feeling that I was just about to die often came to me with sensations that I cannot describe, but such as I should imagine a person dying would have. It began at my feet, a numb, cold creeping feeling, and seemed to be hardening all over. Two or three of these spells I would have in a day, lasting from ten minutes to half an hour.

"You told me last spring that if I would have an amalgam filling in one of my teeth removed, a large part and perhaps all of these nervous troubles would disappear. But it seemed to absurd to me that I hardly gave it a thought till you urged it again this fall. While my husband was in one of the Western cities he happened to be in a large Dental Association and asked the president if he had ever heard of amalgam fillings causing nervous troubles. He replied, 'Yes we have. It is not common, but some people are poisoned by the mercury, as I can prove,' and then cited the case of a man in that city who was a nervous wreck, given up by several physicians. At last one doctor said he believed him to be suffering from mercurial poisoning, and, upon examination, found seven amalgam fillings in his teeth. They were removed and from that day the man began to improve, and is a strong, well man to-day, scarcely knowing what a nerve is.

"So my husband wrote to me to take your advice and have the filling removed. I did so about two months ago. Immediately I felt better and coming home felt as though

I could have walked to Beersheba and not have fallen. My buoyant feelings have not lasted, however, and some days I am almost discouraged. But I know that I am better. I have not had one of those awful dying sensations, nor do I have nearly so much of my nervous troubles. I can go downtown and to New York and do many things that I could not do before I had the amalgam filling out. Still I do have days of some of the old feelings and fears, but they pass away more quickly. I am living in hopes that it will be as you said, 'They will all be gone to stay away, in time.' But as the filling was in two and a half years, I could not expect to be cured in two months.

"Oh, Doctor, how I wish I had taken your advice last spring and saved myself the sufferings of the summer and fall! I wish I had never had it put in my mouth. No dentist would put in another for any amount of money. I want to thank you with all my heart for insisting upon my having that filling removed and bringing brightness again into my life. Days when I feel well I am the happiest woman living. I only long to feel entirely well, and trust as the poison passes off that I shall.

"Very gratefully yours,
Mrs. N."

Case 5. In July last I was called to see Mrs. H , aged twenty-six, who was in a very excitable condition, afraid to go out alone in the street or stores lest she become unconscious and be taken to some hospital. Upon looking up she felt as though she were falling backward; when looking down, as though falling forward; when standing still, as though she were going to pieces; when lying in bed, as though floating toward the side wall; when sitting in a chair she often felt as though she were dead all over, and that it would require the greatest effort to make any movement. Her troubles began in the fall of 1895, with pains in the back of her neck and about the lumbar regions followed by pains in her left thigh and arm, which would last from a minute to one or two hours and then pass off to reappear there or elsewhere at irregular intervals. In the spring of 1896 she complained of stiffness of the jaws, of her left hand and foot going to sleep, with continued numbness of the third finger of the left had. The left side of her head and the left ear would often become numb. The large toe on the right foot would be numb for weeks at a time. She also complained of her limbs being heavy, like lead, and at times it was difficult for her to raise them. There was loss of memory, the eyes looked dull and heavy, the skin had a dingy look which washing did not improve. Feelings of dread and fear lest some calamity might befall her, made her afraid to stay in or go out alone, which she had ceased to do for more than a year. I treated this lady for several weeks without making any progress on the case. Then I examined her teeth and found nine amalgam fillings, which I believed had more to do with her condition than anything else. I therefore advised the removal of the fillings and that they be replaced with gold or bone. The work was done. In less than a week she began to improve; in three weeks you would hardly have believed her to be the same woman. All her symptoms have abated; the numbness, the heaviness of limbs, the constant fear, the falling tendencies, the stiffness of jaws, have disappeared, and she goes out alone. There is a buoyancy and vivacity in her manner which shows that her hopes and anticipations are bright. Her skin looks clear and healthy, her eyes sparkle with expression, while her memory is true to her as in former days. Since the removal of the amalgam she has gained twenty pounds in weight. I might say in passing that nine physicians had treated this case before it came to me.

I might describe several other cases, in one of which the fillings were in between twenty-five and thirty years, and the toxic effects manifest for a dozen years; but those already given are a sufficient illustration.

Members of the dental profession who are so freely using amalgam tell us that over the surface of each filling there is an oxidation which prevents any possible absorption of the mercury. Fillings which have been removed are bright, where in contact with the cavity, indicating that this oxidation occurs only to the exposed surface and not to that which comes in contact with the structural parts of the teeth. The circulation in the teeth is continually in contact with the unoxidized surfaces of the amalgam and is constantly receiving some mercurial taint which is carried throughout the system. As the nerve-centers are most impressionable to its toxic effects, we find neurasthenic conditions chiefly resulting.

It is not my purpose at this time to indulge in theories as to how these results follow the use of amalgam, but to merely state the facts. While many having these fillings seem to be exempt, others suffer from the subtle effects of the mercury. This is clearly proven by the cases I have cited, which have come to my knowledge during the last two years. So long as the system keeps in vigorous condition many feel no ill effects of the poison, but when from any cause it falls below par, either from over-tax or from disease, the toxic effect of the mercury becomes dominant, with those susceptible to it, and gets the mastery of the nervous system, to be followed in many cases by the train of symptoms mentioned above.

Although the number of cases may be comparatively few, they deserve as thoughtful consideration as would be given the subject if mercurial neurosis were more common. I doubt not that our insane asylums have many an inmate of a mental state developed by amalgam fillings, which produces excitation or sluggishness of brain, impairs thought, destroys memory, blunts perception, and relegates to despair what otherwise might be a bright and brilliant career.

To insist upon a patient's enduring the agony, torture, and expense of having these fillings changed for gold, requires considerable nerve, with positive assurance of a correct diagnosis, for in case no improvement should follow the physician would be a subject for wholesale condemnation, and branded as a crank. Fortunately for the writer, in no instance has he dvised the removal of these fillings where a marked mprovement has not followed in a few days. It would be unreasonable to expect the relief to be complete and immediate, for the removal of the fillings does not remove the mercury which has been gradually absorbed into the system during months and years of contact with the amalgam, and which has seriously affected the nerve-centers. But it does stop the supply, and when that is cut off there is an abatement of all the more prominent symptoms, followed by a marvelous improvement, and the patient realizes that he is living under new conditions, with hopes and aspirations he has not known for long months and perhaps for years past.

For the conscientious physician to obscure and unsuspected causes of disease have a peculiar interest, and he will not allow prejudice to prevent a careful investigation of the facts which may reveal such causes.

If this paper shall but stimulate some present to a more earnest study of this subject it will have fulfilled its mission and put into motion a train of thought which must eventually secure to many a now hopeless sufferer a relief so great as to be almost the beginning of a new life.

DISCUSSION.

When our President asked me to take part in this discussion, and told me that I would be allowed ten minutes, I determined I could cover more of the enormous ground involved, and in a more connected manner, if I should read what I had to say.

About the year 1826, M. Traveau, of Paris, France. advocated the use of what he called "Silver Paste" for permanent fillings in teeth. This metallic preparation was first brought to the notice of the dental profession in the United States about seventy years ago through the advertisements of two Frenchmen by the name of Crawcour.

It was called by them the "Royal Mineral Succedaneum;" succedaneum, a replacer or substitute, a name which is indicative of fraud and which consequently stamps the adventurers as unworthy of professional respect.

It was soon proven that instead of being a mineral compound it was purely metallic, and consisted of silver and copper rendered temporarily plastic by the addition of mercury. It was easily manipulated, and they were enabled to fill a class of largely decayed teeth with frail and broken cavity walls such as had never been attempted by the most skilful surgeons.

Scientific investigation at last was imperative, and, as a result, the foremost men who had been arrayed against it now became its ardent supporters. Professor Elisha Townsend, one of the best gold-workers of his day, and President of the American Society of Dental Surgeons, found that the cry of mercurial ptyalism was not supported by fact.

This investigation gave birth to an organization called "The New Departure Corps," and was composed by the following gentlemen: Professors Henry Morton and M. B. Snyder, scientists; Messrs. Jacob B. Eckfeldt and Patterson Dubois, assayers of the Philadelphia Mint, metallurgists; Drs. S. B. Palmer, Henry S. Chasee and J. Foster Flagg, dentists. The work of this organization gave to our profession what is known as the new-departure creed, the most important deduction of their work being expressed in the following statement: "In proportion as teeth need saving, gold is the worst material to use."

These gentlemen did much to improve the formula for amalgam alloys and it has gone through successive changes until now we recognize the following to be as good in all respects as we can get: Silver from 60 to 70; tin, from 30 to 35; and gold and zinc from 5 to 10. These are about the proportions. These metals are melted in a crucible and thoroughly stirred while in a molten condition, and then poured into a mold. After the mass has become cold it is cut into fillings with a file and we then have the alloy.

To make an amalgam for filling a cavity the required amount of alloy is placed in one side of a pair of weighing scales, and an amount of mercury in the other sufficient to balance the scales. Both the alloy and mercury are now put into a mortor and very thoroughly mixed, after which all possible mercury is squeezed out through chamois with heavy pliers, and the amalgam is now ready for insertion into a *properly prepared cavity*.

An ordinary sized cavity will require 5 grains of alloy. After adding 5 grains of mercury and thoroughly mixing, 1½ grains of mercury can be expressed through the chamois, leaving 3½ grains of mercury in a filling of 8½ grains. This is in a cavity with entire walls. In cavities where contour fillings are required the amount of mercury will be slightly increased.

The object of putting an excess of mercury in the mixing, and then expressing the surplus, is to facilitate a complete and thorough amalgamation, while expressing of the surplus removes only the mercury, no portion of the other metals passing through the chamois.

Such a filling placed in a *properly prepared cavity* makes what all dentists recognize as a good filling, and from which no mercury can be removed so long as it remains in the mouth. This, I believe to be the consensus of opinion of all scientific practitioners of dentistry throughout the world.

It is claimed, however, that the mercury *does* get out and is absorbed into the system, producing mercurial neurosis, ptyalism, etc.

If any of the mercury could be removed from such a filling it would no longer be a fit stopping for a tooth. It would be disintegrated, soft, and would fall out, either by mastication or the toothbrush. We do not however, find amalgam fillings acted upon in this way. Fillings that have done good service for thirty years are always as hard as the day they were inserted. The mercury *can* be removed by heat and by chemical affinity, neither of which can be produced so long as they remain in the mouth. The boiling-point will no eliminate it, and as the tissues of the mouth will not tolerate anything approaching that temperature, heat is excluded.

I am reminded here of a letter recently received from Dr. Bogue, in which he says, in reply to my question about the action of iodide on amalgam: "I did not make any experiments at all relative to the systemic effects of iodine upon mercury which had entered the system from amalgam fillings in the teeth—perhaps because most of the patients for whom I had the honor of operating have not during my time been subjected to a dull red heat, which is about the temperature required to produce either of the two poisonous salts of mercury."

Messrs. Woodman and Tidy, in their work, on "Forensic Medicine and Toxicology," make the statement that the following medicines have sometimes produced salivation: Bromin, arsenic, prussic acid, nux vomica, cantharides, digitalis, conium, opium, and particularly iodid of potassium; and in the face of all this the mercury in amalgam fillings is made to bear so great a burden.

Professor A. Winter Blythe, in his work says, in speaking of amalgam, that the mercury is in *too powerful a state of combination* to be attacked by the fluids of the mouth.

That serious consequences will sometimes follow the insertion of any filling material placed in the cavity of a tooth, I will admit, but such results are not due to the *nature* of the *filling material*, but to the *condition* of the tooth at the time of filling. The first of these are caused by the pressure of the fillings on an exposed pulp; the second is where a filling is inserted over a devitalized pulp; and the third is where the pulp has been removed and the canals not properly sterilized.

The results from this method of fillings are facial neuralgia, shock from thermal changes, pain on percussion, pericementitis, alveolar abscess and great cellulitis, elevated temperature, fetid breath, and excessive flow of saliva, with corresponding constitutional depression. When amalgam had been used in a filling of this kind, all these conditions were said to be caused by the mercury in the amalgam, but *anything* that will hermetically seal a cavity containing septic material, will, on true surgical principles, elevate the temperature, the same as an abscess without a drainage-tube or any cavity in any part of the body containing septic material with no outlet.

The question that is constantly asked of me is, "How great a loss of mercury is sustained by an old amalgam filling ?"

This is most thoroughly exemplified by a wonderful series of scientific experiments, in a masterly work on that subject, and as the author of that book is in the room he will explain it far better than I can.

In a letter recently received from Dr. Jarvie he says, "I have practiced dentistry for thirty-five years, and have yet to see the first case where injurious results have attended the *intelligent use* of amalgam."

Far greater than any series of scientific experiments can possibly be, is the fact that tons and tons of amalgams are used every year, and no injury has ever been proven to be caused by it.

In J. Foster Flagg's work on "Plastics and Plastic Filling," in looking for some scientific experiments, he says :

"I found reference made to the practical experiments of Messrs. John and Charles Tomes, in 1861 to 1872, which I had regarded as conclusive and accepted as such. I found the term 'oxidization' as almost invariably applied to the discoloration of amalgam fillings, corrected by the acceptance of the long before urged, and much more reasonable hypothesis of 'sulphuretting.' I found a long list of elaborate experimentation with filled teeth and amalgam pellets, weighed with marvelous accuracy, placed in little bottles containing saliva acidulated with nitric, acetic, citric, or hydrochloric acid, and kept in a water-bath inside another water-bath at a uniform temperature—blood heat—for a period of three months, in order to prove by analysis of the saliva whether or not amalgam fillings would be capable of producing mercurial ptyalism. I could not reasonably doubt the certificate of the Professor of Analytical and Applied Chemistry that the saliva contained no mercury in solution."

In speaking of the systemic effects, the author quotes from a discussion held in the Pennsylvania Association of Dental Surgeons, as follows:

"Dr. C. N. Pierce, one of the professors of the Dental College of Pennsylvania, who opened the discussion, said in regard to amalgam, ptyalism, that it was a thing of 'so rare occurrence that he believed the profession had never heard of but one practitioner who thought that that result was produced by amalgam.' "

Professor T. L. Buckingham said, "he had never seen a case of salivation and had doubts about its ever having produced ptyalism;" that mercurial effects were "influences produced through the general system, and he did not think amalgam fillings would produce these effects."

Dr. J. H. McQuillen said that "in an experience of fourteen years he could not recall a single instance of necrosis of the jaws, ptyalism, etc., of which others assert they have seen so many;" and that while he recognized the fact of idiosyncrasies in which the smallest quantity of certain medicinal agencies is followed by untoward results, and would not, therefore, offer his negative testimony as positive proof, yet "his own experience had made him look upon those who assert that they have seen so many cases with considerable doubt as to the value of their judgment or opinions as reliable diagnosticians."

Dr. C. P. Fitch said, "in regard to its toxical or injurious effects upon the system, he was inclined to question, if not wholly doubt, any such influence, and concurred in the views advanced by Dr. McRuillen, that he had yet to see the first case of alveolar abscess, ptyalism, etc., due to the presence of mercury in the amalgam."

Dr. J. M. McGrath testified for himself and for his father, who had had an amalgam experience of ten or fifteen years, that as yet "they had never seen any bad effects resulting, such as had been ascribed to its use by many practitioners."

Dr. Flagg says: "Thus it was that I was fortified by the combined testimony of gentlemen whom I could esteem as conscientious observers, and for whom I had much regard, both socially and professionally. It now remained for me to add the testimony of almost thirty years more of increasingly acute scrutiny (this book was written ten years ago), with the assertion that during all of my amalgam experience *I have never seen one case* of mercurial ptyalism, mercurial periostitis, mercurial necrosis, or of the *slightest symptom which could reasonably be ascribed to mercurial action.* I have treated them experimentally with chlorate of potassium to demonstrate its utter impotency, and have then *cured every case* without the use of any anti-mercurials and have left the teeth refilled with amalgam. If anything more convincing than this is required, I have it not to offer."

I have before me a very elaborate series of experiments on "The Physical Properties and Physical Actions of Dental Amalgam," by E. A. Bogue, M. D., D. D. S., of New York, now known as Manhattan. If Dr. Bogue is present we should be very glad to hear from him.

In the first place, the dentine of the tooth has a circulation like a vegetable, and only that; the cementum of the tooth has a circulation like bone; the enamel, I need scarcely say, is skin to crystal. It is plainly stated in "Wood's Therapeutics" that minute doses of mercury increase the weight and increase the number of red blood corpuscles. So far, therefore, from being detrimental, it would seem that a thirty-eight years' wearing of amalgam fillings ought to have helped him. Perhaps it is that that enabled him to work eighteen hours a day! I do not see that such a supposition on my part would not be quite as susceptible of proof as the assumptions on Dr. Tuthill's part that these neuroses of which he speaks arose from amalgam fillings.

Then as to the power of mercury from amalgam to penetrate into the system. In the first place, the amalgam filling should be a chemical combination. It should not be a mere loose mechanical mixture. If it be a chemical combination, it is impossible to separate the mercury from the mass short of a heat very nearly approaching redness, excepting it be a dry heat. I did go through a series of experiments, which I have looked over tonight for the first time in twenty years, and I am ashamed of their elementary character, but at that time—in 1873—we knew very little of amalgam fillings. It so happened that two gentlemen then connected with Harvard University, and a third connected with the University of New Orleans had written certain papers which were read and discussed. In the course of my experimentation I kept a whole handful of amalgam fillings at 100° F. for three months, in saliva, for the purpose of making not only the test as to whether it were possible for mercury to be injurious systemically, but also for the purpose of finding out what the effects of certain chemicals were upon the teeth in connection with amalgam fillings. Perhaps, if I might be allowed, I will tell the reason that caused me to commence these experiments. A gentleman of great prominence in the now Greater New York placed his son in my hands for treatment and for a curious reason, as I supposed, declined to pay my bill. He sent him to some one else to have the amalgam fillings which I had put in taken out. This is history. It so happened I had not put any in. He then sent a letter from Dr. Metcalf, Professor of Theory and Practice at the College of Physicians and Surgeons, New

York, to me, with the statement that the probability was that his son was suffering from mercurialism from the presence of amalgam fillings. That boy had but one amalgam filling in his mouth, which had been there a number of years—a tiny thing, about as large as a pin's head. I replied to Dr. Metcalf that the boy was not suffering from mercurialization, but from chronic dyspepsia due to his inability to masticate properly—rather a saucy thing to say to a Professor of Theory and Practice. Dr. Metcalf took it kindly, however, and in a letter inquired of me whether it would not be possible for the emanations from amalgam fillings to produce systemic results. Thinking the question easy to answer I laid it by to the next day, and the next week, and in fact it was unanswered for twelve months, all of which time it took me, besides four or five hundred dollars in cash, before I was able to satisfy myself with an answer to that question. Then came the analysis made by Professor Chandler, cf Columbia College, in which, as has been stated, he certifies that there was no mercury to be found in any of the bottles of saliva, which for three months had been kept at 100° F., and contained, as I said before, a handful of amalgam such as dentists use. That report was made just after a little extract from the "Chicago Medical Journal" for July, 1873, had been put in my hands, in which was an article by Dr. Paine, in which he speaks of "the poisoning of thousands of people all over the world from corrosive sublimate generated in the mouth from amalgam plugs in the teeth; neither cholera, small-pox, or any malarious disease doing more injury in the world than this poison." That is broader and stronger than any statement that has been made this evening, and it was in answer to that and to Dr. Metcalf's very kindly question that these experiments were undertaken. I would only add that it is quite possible to eliminate mercury from amalgam fillings when they are dry, but when they are under saliva, or under water, it has not been found so in three-months' time.

I have been in practice for a number of years and have been looking for these cases of salivation. I saw last October a case that I thought was a typical one, but every filling in his mouth was gold. I saw another case only last month, and that man did not have a single filling in his mouth; so I hardly think that can be charged to the amalgam. The statement was made that amalgam fillings when removed are found to be bright on the side which comes in contact with the walls of the cavity. I think you will find they are as perfectly oxidized there, or "sulphuretted," as they are on the outside.

Mr. President, either mercury produces, when absorbed from the teeth, an entirely different clinical picture than when absorbed from the other parts of the system, or there is a discrepancy in Dr. Tuthill's cases. As he read them off they reminded me more of miscellaneous cases of neurasthenia and hysteria than anything else, and the rapidity with which they changed their character from time to time; the variability of the symptoms and the extreme rapidity with which they got well, even after existing for years. A mercurial poison which has existed for years almost invariably produces a continuous tremor, due to the deposit in the nervous system and accompanying sclerosis. Had these cases lasted for so many years there would have been the production of some organic change there and the candition would not have cleared up so quickly. I think the last speaker is quite correct regarding the element of mind-cure. I think that was the potent element which produced the cure in those cases.

We all admit that there is a circulation in the teeth which may be the means of carrying the poison through the system, and this kept up for weeks, months, years and decades, the system will feel the effect of this poison. I tell you, gentlemen, no one knows the direful consequences if he has not been there himself. Of course I am more interested in this subject, for it came near costing me my life.

I have often thought how the fathers in dentistry wrought well when they fought to the bitter end this subject of amalgam fillings; how they wrestled on the one side to prove it harmless, and on the other to expose its treachery and condemn its use. The struggle lasted from 1841 to 1847, when in the New York Dental Society all who had not pledged themselves not to use amalgam were obliged to resign or were expelled. Those who had been the best of friends became bitter enemies. I hope that the same conscientious feeling which prevailed then will prevail again.

I would like to say a word on that point. I think at present there is hardly a dentist in practice in the entire world but habitually uses amalgam; they have all overcome their prejudice to it. There is no more danger of that fight being renewed than of any other absurd thing.

I do not claim for this particular effect of mercury that you get salivation. There is no ptyalism present; I never saw it in one case, but, as I said in my paper, there is a peculiar action upon the nervous system. The theory that recovery was due to mind-cure is too absurd for consideration in connection with the cases I have cited. I have seen people who would get well on that theory, but I am sure that does not hold in these cases.—*Items of Interest.*

ARTICLE II.

SOME SUGGESTIONS ON THE TREATMENT OF PYORRHEA ALVEOLARIS.

G. LENOX CURTIS, M. D., NEW YORK CITY.

Read before Alumni Association of Boston Dental College, December 14th, 1898.

In my remarks I shall not attempt to exhaust this subject, which is broader than the present status of knowledge. I, however, make a few suggestions, with the view of drawing out discussion that may lead to widening the field. I shall not think it strange if some of my hearers disagree with me, for I differ somewhat with most authors upon the subject. I think that Dr. Pierce has fallen into the error made by some other writers, who claim that uric acid is the cause instead of the result of rheumatism and gout, of which pyorrhea alveolaris is a symptom, seen only in certain classes of the discrasia. I have found that it is not always safe to adopt some views, especially those found in some books. Not only dentists, but physicians sometimes depend too largely upon literature, for their practice in most oral diseases.

Perhaps all dentists do not have facilities for thorough experimental work, but they certainly deserve credit for the persistent manner in which they have endeavored to cure, by devoting their time almost wholly to the treatment of a single symptom. I believe that very few recognize the importance of general treatment, with the view of eradicating from the system the conditions that aggravate this disagreeable and offensive malady. There are physicians—even those of prominence—who seem to fail to observe one symptom familiar to every dentist—that is, they do not appear to connect the local aspect with a systemic disorder. In both of these professions the lack of general knowledge concerning the intimacy of the systemic with the local (directly or indirectly) is something surprising. The present plan of medical teaching is far from being equal with that known to the educated dentist more familiar with oral diseases. The medical curriculum will not be effective until its students are better educated upon oral diseases. The etiology of Pyorrhea Alveolaris or Loculosis Alveolaris, to my mind, is best presented by Dr. Eugene S. Talbot, who attributed the principal cause to careless dentistry and degeneracy of some of the oral tissues.

The clinical features are best described by Dr. J. N. Farrar in his articles in the *Independent Practitioner*. April and September, 1886.

Among the local causes for which I believe careless dentists are responsible, is extraction of one or more teeth, leaving thereby imperfect antagonism, improper contour fillings, overlapping fillings between the teeth, ill-fitting root bands and plates, ligature, file and emery strip wounds; possibly too hard malleting is a factor; certainly bunglingly made regulating machines, V-shaped spaces between the teeth, whether caused by file or wedge, allowing lodgment of food, salivary calculi and cheesy deposits. Any local condition that leads to degeneracy, or any medicine that causes salivation should not be overlooked in the diagnosis and treatment. I regard rheumatism, gout and syphilis as potent causes of this malady, but, of course, it does not necessarily follow that these affections always accompany pyorrhea alveolaris. I sometimes think that physicians do not always appreciate the importance of retaining the natural teeth, or substituting artificial ones where only one or more teeth are lost. As the treatment of socket diseases more properly belong to the dentist, and many of them do not thoroughly remove the deposits from the teeth, and a less number have a practical knowledge of the best principles in the treatment. I think more surgical and medical education should be taught in dental colleges, and more dental education taught in medical colleges. Most dentists are general practitioners in their calling, attempting all parts, and do not follow exclusively any one branch until they find that they excel in it. Instead of advising their patients to go to a sperialist for treatment of that in which they do not excel, they too often skim over that, making a feint at treating the disease, or, what is more unpardonable, adopt the "do-nothing-plan," and tell their patients this trouble is incurable.

I believe pyorrhea alveolaris can be cured. This I feel I can prove by tabulated cases. Treating this disease, while practiced by dentists, belongs as much to surgery as the reduction of fracture of a bone. Of course, only the deft in skill can properly treat it. Dr. Dunlap truthfully said, "A doctor can be made in five years, but it requires twenty-five years to make a first-class physician."

A clear knowledge of the condition of the patient is an important matter. The surgeon generally tries to learn this, while the dentist too often overlooks it. The restoration of the general health is essentially the cure of pyorrhea alveolaris, but the general health cannot be accomplished so long as this particular disease exists in an aggravated form. The ordinary physicians rarely examine the mouth to ascertain whether there are sufficient teeth to masticate with, and overlook the common fact, that there are often pyorrhea pockets filled with bacteria and pus, daily being mixed with the food, and continually carried into the stomach. Nearly all persons affected with this disease have dyspeptic ailments, anemia, blood poisoning, and accompanying these there may be various forms of neuralgia and occasionally, mania. A physician would not expect to cure dyspepsia, or to cure phthisis, until he had first cured nasal catarrh, if present. I believe that the nails and the teeth are among the best indicators in diagnosis of rheumatism. They show certain signs long before other symptoms appear, except those found in the blood. They may be regarded as an index showing when to cease treatment for rheumatism. When the abrasions on the teeth lose their hypersensitiveness, and the nails lose their corrugations and lines, returning to their normal smoothness and flexibility, we will know that the rheumatic poisons have been eliminated. Can not the ridges so frequently found in the teeth be accounted for through prenatal influences, such as rheumatism during gestation? Why should not the tooth germ become marked as well as the nails? The hardness of enamel retains the ridges, while the nails change about every three months, and the indicator may be lost.

The examination of the blood is important in diagnosis, as this pabulum shows the presence of existing diseases. The examination of the blood is, I think, the strongest basis in diagnosis. In many diseases such evidences may, in their early stages, be found in the blood. These are always found before the objective or subjective symptoms. They are the first to come and the last to leave. Dr. Robert L. Watkins claims that fibrin is present in the blood in advance of the general symptoms of rheumatism, apoplexy, organic heart disease, fevers, etc., and is as variable in form as are the diseases themselves. Dr. Watkins has found in the blood of patients suffering from pyorrhea alveolaris different varieties of fibrin, spores of syphilis, eczema, tubercular matter, and the bacillus itself. He found these even when the diseases were not active. We may, therefore, reasonably base our hope of ascertaining the etiology of the disease by the study of the blood.

Dr. Talbot regards that careless dentistry is the cause for the increase of pyorrhea alveolaris. Dr. Beers touched the key-note when he said: "The gingival margin should not be wounded, greatest care should be taken to heal the wound without infection, especially is this true in cases of inherited tendencies. While the neurotic patient is prone to pyorrhea alveolaris, exaggerated cases are not infrequent in the phlegmatic patient. Although no outward sign of lesion exists, it is often found that the pulps of some teeth involved are devitalized. Infected tissue from septic tooth canals is often classed as pyorrhea alveolaris, and treated without first removing the cause, and from this the teeth are often lost. Whenever such teeth are extracted (in order to prevent the continuation of the disease) the sockets should be curetted and treated as open wounds until filled in by granulation.

Patients naturally shrink from being hurt, but now that we can safely use a strong solution of cocaine, by first administering its antidote, volaseum, the treatment of pyorrhea alveolaris is comparatively painless. I would not have it understood that I believe every tooth involved in this disease can be saved, or that an attempt should be made to save all the teeth, To do the greatest amount of good, it is often necessary to make some sacrifice, but because a number of teeth are loose, it does not follow that they should be extracted. The patient's wishes should be consulted, and as they look to their doctor for guidance, they are generally willing to accept his advice. I was recently asked by a dentist to see with him a case of pyorrhea alveolaris that he had been treating for four years. He appeared satisfied with the results, for by the use of ligatures he had been able to hold in position several loose teeth; yet this was done to the detriment of those teeth to which they were fastened. The gums were hypertrophied, boggy and purple, with evidence of calculi beneath them. Four of the teeth which had not been opened contained septic pulps.

Medical treatment for the dissipation of degenerating causes should be given in conjunction with local treatment, and should be continued until the disease is eradicated—that is, the general health of the patient should receive careful attention. Septic canals should be cleansed and filled with a permanent material. Remove all the calcareous deposits, ulcers, abscess sacs, carious bone, irritating roots, and in fact every source of irritation. The greatest care must be observed in curretting and dissecting away every particle of diseased tissue, so as to leave a fresh and healthy wound, which should be treated as such and encouraged to heal as rapidly as possible. Next, boil out all remaining debris with peroxide of hydrogen. The patient should be instructed to use a sterilizing mouth wash (electrozone is probably the best) every half hour, if possible; then apply tincture of iodine sufficient to flood the wound around the roots. This treatment should be continued every two or three days until the wounds are healed. Care should be observed to avoid blood-letting while treating the wound lest it become infected.

The period of treatment is usually from one to two weeks. The fixation of teeth should be done as early as possible after the first operation by means of a splint, as devised by Dr. Wm. L. Fish. Proper occlusion of the teeth is essential to prevent undue pressue on any one, and to facilitate mastication. Never use acids nor mercury. Operate on a small part at a time. Stop treating the wound when it is healed. When the disease is so extensive that little attachment to the root remains, the pulp being vital, the extirpation of the pulp and the treatment of the canal, if septic, should be done. Instruct the patient to return when any irritation of the gum or jaws is noticed, and every three to six months for examination. It is not always easy to impress upon the patient the importance of this advice. The irritant that caused the disease will reproduce it.—*Dominion Dental Journal.*

ARTICLE III.

A CASE OF BRONCHITIS AND PNEUMONIA CAUSED BY THE INHALATION OF THE FILLING FROM A TOOTH BROKEN IN EXTRACTION.

CHARLES O'DONOVAN, M. D., BALTIMORE, MD.

On March 21, 1891, I was asked to see Mrs. F. B., White, aged forty-six, married, mother of three children, the oldest about twenty-three. She is a stout woman, of medium height, with very florid complexion, who had always been healthy except for occasional colds that were hard to shake off, and often caused mild bronchitis. On the day before she had had a tooth extracted, under the influence of nitrous oxide, by a perfectly competent dentist, but he had broken the tooth and had caused her a considerable amount of pain in the operation. She took the gas but once, but did not recover well from its inhalation. She felt very much "stuffed up" after returning home, and breathed with difficulty. She thought that she had taken cold while at the dentist's, but paid little attention to the matter, fully expecting to be rid of it by the next morning. On the contrary, she was much worse; she had a very restless night, sleeping but little on account of the oppressed breathing, and being distressed by a teasing but uncontrollable cough, which was rasping and dry, coming on in paroxysms, but giving rise to no expectoration. I examined her throat and chest very carefully, but could detect nothing wrong; so I ordered a simple expectorant, containining a slight amount of morphine, and told her that she would soon be all right. By the next day I had reason to change this opinion, for I found her in the same condition, having coughed nearly all night, her nervous system rapidly showing signs of distress, her pulse up to 119, and temperature to 101°, and a process of bronchitis developing in the medium-sized bronchi about two-thirds down the right lung and midway between the spine and the axillary line. From this the bronchitis spread in a few days throughout the entire lower third of the right lung, with considerable elevation of temperature and quickened pulse rate, accompanied by great prostration. At the same time her expectoration became quite free, beginning as mucus and froth, but rapidly becoming purulent. Meanwhile the other lung remained perfectly clear throughout. In spite of absolute rest in bed, the best of nourishment, excellent nursing, and various different expectorations and sedatives, she continued to grow worse daily; she lost her appetite, she slept very irregularly and without refreshment, her bowels became costive, her cough continued, she complained always of an oppression about her chest, and began to have a cutting pain in the right lung with each cough or forced inspiration. On April 10th a distinct dull spot was made out just where the original focus of inflammation had been; it was not pneumonic, it had no tendency to spread, but seemed to be a dead, flat spot about as large as a pigeon's egg, surrounded by an area of dull, infiltrated tissue, that faded imperceptibly into the bronchitis surrounding the area. This spot grew slightly larger as time passed, but no new foci developed anywhere else; the upper two-thirds of the lung remained clear and resonant, but the lower third was very dull upon percussion, almost approaching a hypostatic pneumonia, with moist rales in the medium and finer tubes to be heard all through the inflamed area. The left lung showed also some few moist rales, but no dullness. She had every evening a rise of temperature to 102° to 104° F., with a fall during the morning to 99° to 100° F. She was evidently very ill, but unaccountably so. Tuberculosis was thought of, as her family history showed some taint, but the sudden onset and anomalous development of the trouble made it unlikely; however, some of the sputa was examined and showed no bacilli. Her nourishment was forced, and she was encouraged to sit up a while each day, but she was not improved, and asked to be allowed to stay in bed. Quinine and other antipyretics were given, but had no effect upon the fever, which became more and more hectic in character, with chilly sensations before the rise, and the expectoration began to have blood in it in increasing quantities, never any large amount, but quite as much as in pneumonia. By the end of April the original spot showed evidence of softening, and the formation of a cavity soon followed: it was clearly defined, not larger than a walnut, with well-marked amphoric breathing, some ægophony, but very little or no bubbling. In the rest of the lung there was no change in the general condition, the area of inflammation and infiltration did not extend, nor did the bronchitis show any sign of improvement. After consultation the condition was readily agreed upon, but no reason could be assigned for this trouble, nor could a satisfactory prognosis be given. Her cough continued to be always troublesome, interfering much with her rest at night, and giving rise to a very free expectoration of thick yellow stuff, with frequent admixture of a little blood; her pulse was rather hard and jerky, beating about one hundred to the minute, and her temperature was constantly above the normal, with a suspiciously regular rise each afternoon. Except for the inability to find bacilli, and her excellent health in the past, I should have diagnosticated tuberculosis without hesitation. All through May and early June she continued in this condition. She had a trained nurse, who devoted great care to her nourishment, that being given the first place in treatment rather than any medicines; of these, various expectorants and tonics were used, including a fair allowance of whisky. As a result she lost no flesh, rather gaining than otherwise, and she presented no appearance of illness beyond the frequent cough with expectoration. Her symptoms, however, pointed to a very serious condition. She described herself as constantly breathing with the greatest oppression, and so weak that the slightest exertion caused her to become faint and brought on severe paroxysms of coughing, although she was forced to get up every day in spite of daily protests. The lowest third of her right lung became gradually waterlogged, with general, diffuse bronchitis through it, giving rise to moist rales everywhere, with exudation and infiltration, especially as the original focus was approached, this being a cavity surrounded by a zone of consolidation. In the left lung some bronchitis appeared also, but this affected only the medium-sized tubes and did not produce much extra-bronchial infiltration. On June 17th she went to Atlantic City, being in the same general condition, with oppressed breathing, frequent cough, much purulent and some little bloody expectoration, no appetite, but taking food under compulsion, sleeping badly, and in a very wretched frame of mind. It was hoped that the sea air would benefit her, but she failed to respond in any way to the change. On July 7th—more than fifteen weeks from the time that she had so suddenly and peculiarly developed her bronchitis—in a severe paroxysm of coughing she spat up, with the usual purulent and bloody mucus, a piece of amalgam filling from the broken tooth, smooth on one surface, but very rough and jagged on the other, where it had been joined to the decayed and excavated remnant of the tooth; it formed approximately a parallelogram measuring half an inch long, three-eighths of an inch wide, and having a thickness of an eighth of an inch; it weighed 28.11 grains. Although very doubtful of the final outcome of such prolonged irritation, I wrote most hopefully to her, and advised her to stay on at Atlantic City. At first her improvement was very slow, causing her much discouragement, and leading her to leave the seashore early in August for a Blue Ridge Mountain resort; here she grew gradually stronger and better, gaining in various ways. I did not see her until late in September, when I found her practically well, except for the cavity in the right lung, evidently the place where the foreign body had been lodged. This cavity, although perfectly apparent and readily made out, was much smaller than it had been in June, and slowly contracted during the succeeding months, disappearing finally during the winter. She continued, for several years, more than usually susceptible to colds, and always found with each new cold that bronchitis was apt to develop in the right lung with a good deal of pain at the side of the cavity. In time this disappeared also, and she is now (October, 1898) perfectly well.—*New York Medical Journal*, Nov. 26th, 1898.

ARTICLE IV.

THE DECIDUOUS TEETH AND THE SIXTH YEAR MOLARS; DISASTROUS RESULTS FROM NEGLECT AND THEIR TREATMENT.

Although great advancements have been made in dentistry, yet a large gap has been left which requires to be filled in. It seems strange that the deciduous teeth have received so little attention. The numerous authors who have written on diseases of the mouth, and have treated the subjects in a masterly manner, have either totally ignored the treatment of deciduous teeth, or have touched the subject very sparingly. Has this neglect been because they considered the deciduous teeth not worthy of much consideration as they last only such a short time and are replaced by a permanent set ? If this is the case they have made a very grave mistake, as I consider the milk teeth act a great part in the physiology and pathology of childhood, and deserve a great deal more attention than has been bestowed upon them. Their neglect may cause serious trouble in the health of a child whose teeth have been extracted too soon or are so badly decayed as to cause pain in mastication; they cannot properly masticate their food, in consequence of which assimilation is imperfect, which causes a defective bodily development; moreover the irregularity of the permanent teeth so often met with is caused greatly by the too early extraction of the deciduous teeth. To avoid all these disadvantageous conditions there is only one remedy, viz., place the children from their early youth in the care of the dentist, and at the same time let the parents be instructed to watch their children's teeth as much as they do their own.

The eruption of the deciduous teeth is completed between the twenty-eighth and thirtieth month after birth, and from this time on, or say at three years, they should be placed in our hands. It may appear that a child of such tender years is too delicate to undergo a dental operation, from which many a grown-up person will shrink. As far as this is concerned, the child does not think about it, and if the dentist understands how to handle these delicate patients, he will have less trouble with them than he has with some of their parents. A great many parents make the sad mistake of speaking in the presence of their children about the operation and the pain they had to endure while in the dental chair. The children may not appear to be listening, but not a word escapes their attentive little ears, and when their turn comes to go to the dentist they go with a prejudiced idea.

The sensitiveness of the nerves is not so highly developed in the child as in the adult. I have found that I could touch an exposed pulp in a deciduous tooth without causing the same amount of pain as in a permanent tooth. We can therefore without much difficulty arrive at our aim, to save the milk teeth as well as the permanent from the ravages of caries, to which they so easily fall victims. We have become acquainted with the disturbances which arise in the health and normal development of children whose teeth have been left to take care of themselves. Not alone does the health suffer, but also the facial expression. The alveolar arch that has lost some of its teeth will contract rather than enlarge with the growth of the child, consequently when the permanent teeth make their appearance there is no room for them, causing irregularity, which is often very difficult to correct without regulating appliances, and sometimes the loss of one or more permanent teeth. And even if regulated the trouble does not end, as in some cases it is very difficult to retain the teeth in their new position, necessitating the wearing of retaining appliances for months or even a year or more, until ossification is complete and the space caused by moving the teeth filled up. If the retainer is taken off before ossification is complete, the teeth will have a tendency to fall back to their original position. Aside from these difficulties, if we consider how many teeth become carious through regulating appliances, we have to admit that it is of importance and necessary to keep a strict watch over the children's teeth from their earliest youth. We are well aware that a great many parents are not convinced of the necessity of this, as the general opinion is, that the milk teeth are only temporary and do not last long, therefore they require no attention. There are others who think that we dentists only fill the temporary teeth for pecuniary gain. It nevertheless remains our duty to convince the parents of the necessity of giving the children's teeth all the care and attention possible, and dentistry and humanity will profit thereby.

I will now give a short account of the remedies I employ in the treatment of carious deciduous teeth.

The treatment does not vary greatly from that of the permanent teeth, and may be divided into four groups.

1. Superficial caries where enamel and dentine is slightly effected.
2. Deeper caries, pulp not exposed.
3. Deep caries, exposed living pulp.

4. Caries, with dead pulp, abscess and fistula.

The treatment of the first and second groups is very simple; it is sufficient to excavate the cavity and fill with cement for the anterior, and cement or amalgam for the posterior teeth. In treating group three commence with the application of arsenic, for which I use Thomas' Arsenious Cotton in very small quantities and allow it to remain only twenty-four hours. This preparation does not act as deep as pure arsenic, and is less dangerous. This is then removed and the opening to the pulp chamber enlarged; if painless I apply carbolic acid to the pulp chamber and leave it for two or three days, but if painful again apply the arsenic preparation for twenty-four hours and treat with carbolic acid again. After this I extirpate the pulp, and apply iodoform and fill the cavity temporarily with gutta-percha and leave it for two or three weeks. The gutta-percha filling is used, so that in case of periostitis, it can be easily and quickly removed. Although some practitioners fill permanently immediately I prefer my method, as I have better results with it than with immediate filling. I use the precaution of a temporary filling as it is of importance to inflict as little pain as possible on the children and they will be the more ready to come for future work. The permanent fillings are the same as in groups one and two, only that the pulp chamber is filled with gutta-percha, avoiding forcing it into the canals. In reference to group four I partly clean the cavity at the first sitting, apply oil of cloves or iodoform and leave it in the cavity forty-eight hours, after which it is thoroughly cleansed. If there is an abscess it is cauterized with the galvano-cautery and an antiseptic injected into the abscess through the root. This treatment is repeated for several days, till fistula and abscess have disappeared, and a temporary filling is inserted leaving it for two or three months, and then insert a permanent filling.

This is my method of treatment. It may, perhaps, appear insignificant, but according to my idea we cannot be too circumspect in assuring ourselves of successful results of so delicate an operation.—*Zahuarztlichez Wochenblatt.*

Communicated.

CIRCULAR LETTER OF THE FOREIGN RELATIONS COMMITTEE OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES OF AMERICA.

To all who feel any concern in American Educational matters, or in American Professional affairs, the annual meetings to be held at Niagara this summer must prove of the greatest possible interest. It is probable that grave questions, more profoundly affecting the welfare of dentistry, will be discussed and it is hoped settled at that time, than have ever been raised in American dental meetings. The far-reaching subjects that loudly demand consideration concern not America alone, but Europe as well. If dentistry is ever to become a profession in fact as well as in name, if it is ever to occupy the position to which advanced men believe it to be entitled, the professional status and tone in both continents must be brought somewhere near the same level. The future welfare of mankind demands there should be some common understanding of professional affairs.

The first dental school was established in America, and for many years the only institutions for professional training were confined to this country. The Dental Doctors Degree is even now peculiar, to American dental schools. For many years, through their excellent practical training, they made American dentistry a synonym for the highest practical efficiency. Then for a time our schools lost ground, and their fair frame became tarnished through the misconduct of some of them, and the criminal laxness of the laws in certain of the states, which permitted the incorporation of fraudulent colleges that sold their doubtful honors abroad and at home, or granted them *in absentia*. It was not until the organization of the National Association of Dental Faculties that any concerted and determined effort to restore the tone of American dental colleges was made, or any practical attempt to bring them to a higher plane, and to force the fraudulent institutions out of existence.

As the natural consequence of the loose methods and legislation of the past, the reputation of the schools that were doing faithful work and maintaining a high standard suffered from the faults of those which were in the habit of receiving unqualified students from abroad, and whose curriculum of study was altogether insufficient. To those not intimately acquainted with American educational matters, there were no means of distinguishing between the good and the bad colleges. All were, by unthinking and uninformed people, charged with the irregularities of the few, and the consequence has been that the reputation of our educational institutions in general has suffered.

Nor was there any complete understanding among the colleges which did desire to maintain a proper standard. Each of our nearly fifty separate states is autonomous so far as education is concerned, that being one of the matters left to domestic regulation by the general government. There can be no compulsory harmony of action, for each college is in a measure a law unto itself, within the limits of state regulation. So long as there was no harmonious concert of procedure, the result of a common agreement and understanding between the different schools whose sole source of income was from the students in attendance, the strife for matriculants and patronage almost necessarily led to a depression of the standard, and too often to irregular graduations.

In the absence of a common law regulating the course of study, some general agreement became a necessity for the maintenance of a proper educational basis. To accomplish this the National Association of Dental Faculties was formed. At the date of its organization the general tone had been so much depressed that it was impossible to establish such a standard for matriculation and graduation as was desirable, but only such colleges were admitted as had the proper facilities for complete instruction, and were conducted by a corps of competent teachers. All other schools were excluded, and their tickets certifying to attendance upon lectures, with their diplomas, were refused recognition by the colleges belonging to the Association. Stringent rules governing attendance, instruction and graduation were adopted, and schools violating them were severely disciplined. The course of study was extended to three full years, and the semesters gradually lengthened until they included from seven to nine months of each year. The curriculum was expanded, until it comprised all the branches of study which the growth of modern professional practice has made necessary. As a consequence, it is believed that each and every one of the colleges embraced in the membership of the National Association of Dental Faculties is now giving thorough professional instruction, and is receiving no students who can not present the evidence of a fair preliminary education. This has been the work of years, for it was impracticable and unwise to make the transition too abrupt. There is much yet to be accomplished, but the Association can point with pride to past achievements, and urge them as a guarantee for its future action.

Two years ago, at the instigation of some of our American graduates abroad, the National Association appointed a standing committee, to be called the Committee of Foreign Relations, whose duty it should be to take into consideration the condition of the American Dental Degree in Europe, and to institute such measures as would prevent the reception of unqualified foreign students by our schools, and to endeavor to give a better understanding of American educational affairs in Europe. It was given authority to appoint European Boards for the purpose of furthering the objects committed to its care, and it was also charged with the attempt to suppress fraudulent and unrecognized American colleges, plenary powers to use Association funds, and even to levy assessments, being bestowed upon it. These extraordinary prerogatives betokened the intense interest which the representatives of the colleges felt in the work. The committee so appointed has labored anxiously and uninterruptedly. It has named the nucleus of a European organization, which it is hoped will be of great benefit to dental educational interests. It has carried on a suit against the most flagrant irregular institution, and has secured a decree condemning it. Before this could be made effective, it become apparent that the repeal of some of the vicious legislation under which incorporation of fraudulent colleges was possible must be secured, and accordingly, in the State of Illinois, bills to accomplish this were introduced, and against strenuous opposition were pushed through the legislature and have become laws. It is believed that if the Committee is sustained by the united voice of the profession its future labors will be more easy, and the entire suppression of all fraudulent schools will be accomplished.

We believe there will be none to dispute the assertion that in the teaching of practical dentistry the dental schools of America have not been excelled by those of any other country. The trouble has been that, for lack of general legislative regulation, the standard of preliminary study has been too low. It is utterly impracticable to raise this to the proper point at one time. Until there shall be a public sentiment created that will sustain effective enactments, it is idle to attempt drastic measures. Such action would only divide the profession and exclude schools which, if the proper time can be given, must of themselves raise their standard to the right level. A regulation that is but a dead letter is far worse than none at all, for it brings law into disrepute. It is utterly hopeless to look for harmony of action through separate state enactments. There must first be an agreement among the representatives of the profession, and then unanimity of action on the part of those of all the states. The attempts at repressive or compulsory action through the different state legislatures as a primary measure, must inevitably result, as it has already done, in a yet greater diversity of laws, and more intense antagonism of professional feeling between different sections. It cannot but end in dividing the profession into two adverse and discordant parties, and the perpetuation of the fraudulent colleges, which it will be impossible to suppress except by unanimity of action. The violent and arbitrary laws already enacted, which encourage and foster bitter animosities, tend to defeat that harmony which alone can bring satisfactory results. If a part of our colleges, existing in the more recently settled and less educationally advanced portions of our common country, are refused recognition and fraternization because they are unable, from lack of time in which to adapt themselves to the changed requirements, to comply with those of a greatly advanced standard, they will thereby be forced into an unprofessional attitude, and will thus perpetrate the existence of irregular American dental schools, to the continued reproach and disgrace of our professional name. We believe it to be far better to advance gradually, but as fast as existing conditions will permit. Hence we deprecate drastic measures, or arbitrary and despotic action. No man or set of men can by independent movements dominate a profession of the dimensions to which dentistry has grown. A proper professional feeling must be a thing for time to bring about. Confidence is said to be a plant of slow growth, and this is eminently true in professional matters.

The wonderful progress made within a few years, under the administration of the National Association of Dental Faculties, leads us to hope that if it is permitted to pursue its own course it will, in a comparatively short time, bring all our colleges up to a point of perfection unattainable by any other means than this mutual agreement and harmony of action. The past is a guarantee for the future, and so long as such rapid progress is being made, it is worse than folly to attempt any violent measures that can be only problematical in their results.

There will be a series of meetings held at Niagara this summer, that can but exercise an over-whelming influence for good or evil on our whole professional future. It is earnestly desired that all who take any interest in our educational affairs will be present at one or more of these meetings. Especially is it important that there be a full consultation between representatives of the colleges and their representative graduates resident in Europe. It is hoped that as many of them as possible will be in attendance, and that so far as is practicable every member of the European Advisory Board will make the pilgrimage to Niagara in July. Nor need the attendance of dentists from abroad be restricted to those thus appointed. The members of the Association will gladly welcome and seek the counsels of any reputable dentist resident in a foreign country.

The meeting of the Foreign Relations Committee will be held at Niagara, commencing on the morning of July 26th. The assembling of the parent body, The National Association of Dental Faculties, will doubtless be called for July 28th, while the National Dental Association, the meeting of the representative men of the profession at large, will convene August 1st. It is desired that foreign representatives in as great numbers as possible will be at Niagara for all these meetings, for while the sessions of the college men have not heretofore been open to strangers, ample opportunity will be given for expression of the views of and consultations with our foreign brethren, and it is within their power to confer lasting benefits upon their profession by making their American confreres fully acquainted with the status of professional affairs abroad.

Respectfully submitted.
W. C. BARRETT,
S. H. GUILFORD,
J. D. PATTERSON,
T. W. BROPHY,
H. W. MORGAN.
Committee on Foreign Relations.

BUFFALO, N. Y., May 20th, 1899.

The following is a list of the Dental Colleges of America which at the present time are members of the National Association of Dental Faculties, whose diplomas and tickets alone are recognized and received by the members of the Association.

Alabama—Birmingham Dental College, Birmingham.

California—University of California, Dental Department, San Francisco; Dental Department College Physicians and Surgeons, San Francisco.

Colorado—University of Denver, Dental Department, Denver; Colorado College of Dental Surgery, Denver.

District of Columbia—Columbian University, Dental Department, Washington; Howard University, Dental Department, Washington; National University, Dental Department, Washington.

Georgia—Atlanta Dental College, Atlanta; Southern Medical College, Dental Department, Atlanta.

Illinois—Chicago College of Dental Surgery, Chicago; Northwestern University Dental School, Chicago.

Indiana—Indiana Dental College, Indianapolis.

Iowa—State University of Iowa, Dental Department, Iowa City.

Kentucky—Louisvilie College of Dentistry, Louisville.

Maryland—Baltimore College of Dental Surgery, Baltimore; Baltimore Medical College, Dental Department, Baltimore; University of Maryland, Dental Department, Baltimore.

Massachusetts—Boston Dental College, Boston; Harvard University, Dental Department, Boston.

Michigan—University of Michigan, Dental Department, Ann Arbor; Detroit College of Medicine, Dental Department, Detroit.

Minnesota—University of Minnesota, College of Dentistry, Minneapolis.

Missouri—Kansas City Dental College, Kansas City; Western Dental College, Kansas City; Dental Department Marion-Sims College of Medicine, St. Louis; Missouri Dental College, St. Louis.

Nebraska—University of Omaha, Dental Department, Omaha.

New York—University of Buffalo, Dental Department, Buffalo; New York College of Dentistry, New York; New York Dental School, New York.

Ohio—Cincinnati College of Dental Surgery, Cincinnati; Ohio College of Dental Surgery, Cincinnati; Western Reserve University, Dental Department, Cleveland; Ohio Medical University, Dental Department, Columbus.

Pennsylvania—Pennsylvania College of Dental Surgery, Philadelphia; Philadelphia Dental College, Philadelphia; University of Pennsylvania, Dental Department, Philadelphia; Pittsburg Dental College, Pittsburg.

Tennessee—Tenessee Medical College, Dental Department, Knoxville; School of Dentistry, Central Tennessee College, Knoxville; University of Tennessee, Dental Department, Nashville; Vanderbilt University, Dental Department, Nashville.

Virginia—University College of Medicine, Dental Department, Richmond.

Washington—Tacoma College of Dental Surgery, Tacoma.

Wisconsin—Milwaukee Medical College, Dental Department, Milwaukee.

Canada—Royal College Dental Surgeons of Ontario, Toronto.

The following appointments to membership in the European Advisory Board have been made. The vacancies will be filled at the meeting of the Foreign Relations Committee to be held at Niagara, commencing July 26th, prox.

Great Britain, Wm. Mitchell; Holland and Belgium, J. G. Grevers; Denmark, Norway and Sweded, Elof Forberg; Russia; Germany; Austria and Hungary; Italy and Greece, Albert T. Webb; France, J. H. Spaulding; Spain and Portugal; Switzerland and Turkey, L. C. Bryan.

Monthly Summary.

ANTISEPTIC USES OF OXYGENATED WATERS.—At the December meeting of the Paris Academy of Medicine several surgeons gave their experience in the use of oxygenated water in surgery. M. Lucas Championniere said that during the space of one year he had made clinical trial of this agent, and had found that oxygenated water was an antiseptic of remarkable power, and of special value in cases of suppuration of septic infection. Solutions of ten or twelve parts by volume seemed to act best and were very superior to solutions of perchloride of mercury. A solution of oxygen is not only capable of checking putrefaction, but it will also prevent its occurrence. In vaginal hysterectomy a preliminary douching of the canal with this solution gives better results than any other antiseptic fluid. In cases of septic infection after abortion, washing out the uterus with oxygenated water is just as satisfactory a method of treatment as curettage. In addition to the properties already mentioned, oxygenated water is hemostatic. On the other side, M. Charpentier argued that the liquid would not keep, and, moreover, was an admirable culture medium for strepococcus. M. Ferrand also spoke against it, saying the peroxide of hydrogen was not only an irritant but actually a caustic. M. Monod said that, in his opinion, nothing was better than carbolic spray, and M. Labbe agreed with him. M. Laborpe spoke in his turn in defense of the oxygen solution, saying that it was absolutely harmless and could be used as an intravenous injection. In reply, M. Championniere, while allowing that the solution in question was very unstable, argued that it could be obtained from the manufacturer in a state of great purity, and was certainly far superior to phenol.—*London Lancet*, December 17, 1898.

FORMALDEHYDE GAS.—Dr. H. E. Wood states that the chief interest in this drug centers in its powers as a germicide and disinfectant. As a gas it will penetrate not only animal tissues, but almost all organic substances, so that books infected with various pathogenetic germs could be disinfected by being shut up for fifteen minutes in an atmosphere containing the vapors of commerical formaline (40 per cent. aqueous solution of formaldehyde), one part to three hundred of air. The method of Trillat is the preferable one, and consists in the use of the formaldehyde directly after its production by the passage of the vapors of methylic alcohol over red hot metal. Kinyoun has shown that none of the ordinary fabrics are injured by the gas, which is capable of completely disinfecting curtains, carpets, clothing, bed covering, and the minor forms of furniture, although it is doubtful whether heavy upholstered furniture, such as sofas and mattresses, can, in their interior, be thoroughly disinfected. The gas is so irritating that no one can remain in the room during the disinfection, but the lamp employed is automatic, and can be left to itself. It can also be used for the removal of foul odors; one-half to one per cent. solution is sufficient for cleansing vessels in the anatomical laboratory. If the hands be washed with it and afterward with alcohol, they are rendered completely antiseptic, but are not stained or irritiated. It does not affect instruments, and it is efficient in preparing catgut and surgical dressing. For the cleaning of an enfeebled wound, a two per cent. solution is used; but for a continuous local application or free irrigation, one-fourth of one per cent. is sufficient.—*University Med. Magazine.*

EXTRACTING SUPERIOR CUSPIDS.—Sometimes the upper canines are very difficult to extract. When extracting the upper teeth for a plate, remove the teeth on each side of the canine and grasp it at the sides. The sides being more flat, the forceps will not slip, and the tooth can be easily rotated.—Otis Trotter, D. M. D., in "Pacific Medico-Dental Gazette."

ORTHOFORM.—Kallenberger ("Brit. Med. Jour.") finds that orthoform has the following properties :

1. It acts as a local anæsthetic wherever sensory nerve endings are exposed.

2. It is non poisonous, so that as much as 60 grn. was used in one week upon a large raw surface.

3. It is antiseptic.

Cases illustrating the value of orthoform are : (1) Fresh wounds, (2) burns, (3) ulcers of the legs, (4) carcinomatous ulcers, (5) syphilitic ulcers, and (6) toothache where there are exposed nerve endings. The pain mostly disappeared in from three to five minutes, after which the local anæsthesia was complete and lasted on an average for thirty-five hours. If the exudation is very abundant an ointment should be used instead of the powder, which may be washed away. In a case of ulcer of the leg where iodoform was substituted for the orthoform there was no return of the pain for seven hours. This period of freedom from pain is more marked the more prolonged the previous application of the orthoform has been. This agent also limits the exudation. Orthoform has been used internally in laryngeal ulcers, as well as in gastric ulcer and carcinoma. A chloride in addition to the base has been thus employed by Neumayer, but for surgical purposes the chloride is unsuitable, owing to its irritating properties.

NEVER attempt to crown or bridge on roots defective at apex; if you do, it will be safe to predict failure and evil results will follow in a limited period, and patients will realize that there was dishonesty or want of good judgment and skill, either of which will prove hurtful to the dentist and lowering to the profession.—Dr. B. F. Arrington, *Dental Weekly*.

CARBOLIC ACID POISONING.—Wash out the stomach with equal parts of vinegar and water; strychnine hypodermically.—A. Paget Steavenson, in "Dental Review:"

CREOSOTE AND SUNLIGHT.—If you hope to retain the full strength and medicinal properties of creosote, it must be kept in a bottle of white glass, sealed with a glass stopper, and placed where it may receive the light of the sun. If placed in dark bottle and hidden from daylight it deteriorates and loses its desired qualities.—Translated by B. J. Cigrand, for "Dental Digest."

TO REMOVE GUM TISSUE FROM A TOOTH CAVITY.—A difficulty which is frequently met with is the intrusion of the gum into the cervical edge of the cavity, so as to render difficult and very painful the adjustment of the rubber; the excess of gum may be burnt away with a minimum of pain by means of sodium of ethylate.—Robertson, "Dental Record."

BEAR THIS IN MIND.—If you are about to examine a septic case or one where you suspect syphilis, wash your hands in vinegar or dilute acetic acid, and you will soon discover by the smarting any little scratches or abrasions in your skin which might become the starting point of infection. —"Surgical and Dental News."

TANNOFORM CEMENT.—A mixture of tannoform and formaldehyde has been used with great success in more than 1,000 cases, for capping amputated pulps. It is strongly antiseptic, easily applicable, and becomes immediately hard. It is also of good service in pulpitis but it discolors the teeth.—"Dzierzawski, Ref. from D. M. J. Z."

COLD ABSCESSES.—The method of choice in the treatment of cold abscesses is the injection of iodoform in oil, ten per cent. If this fails, use oxygenated water.—Redard, in "Dental Review."

TO REPLACE A BROKEN TOOTH.—Where a tooth or block has been broken from a vulcanite plate, it can very often be reliably repaired by drilling a cavity in the rubber, just under the tooth pins, having sufficient undercuts for the retention of the material. Then by filling these undercuts with amalgam freshly mixed, and filling the rest of the cavity, covering the pins with soft solder, scraps of Weston's or Watt's metal preferably. This is accomplished by holding the tooth in place with plaster, or with the index finger protected with a pad of asbestos, while with any small instrument that will serve as a soldering iron, the solder is melted, using muriate of zinc as a flux. The work will be quite stable as soon as the amalgam has had time to harden. The advantages of the amalgam is that it forms a base upon which the metal used as a solder will flow, and averting its tendency to ball up and pull away from the cavity walls in the vulcanite. The solder will form a good union with the amalgam.—DR. ATKINSON, *American Dental Weekly*.

AMOUNT OF GOLD USED.—In answer to a query, I received the statement from Morgan, Hastings & Co., that annually there are used in the United States 30,000 ounces of gold for filling teeth, which is a very conservative estimate.—F. J. Fesler, *Dental Digest*.

IT PAYS BETTER to be a dentist than an oculist. A man has thirty-two teeth and only two eyes.—"Dental Review."

SITUATIONS WANTED.

WANTED—Situation in Dentistry (Surgical or Mechanical) by English Dental Student of four years practical experience, where opportunities would be afforded of taking post graduate course. Address stating terms etc., to "DENTAL" 117 Chancery Lane, London, England.

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, AUGUST, 1899. NO. 4.

Selections.

ARTICLE I.

PULP MUMMIFICATION.

THEODORE SODERBERG, DENTIST, SYDNEY, AUSTRALIA.

(From *The Dental Cosmos*).*

In the *Dental Cosmos* for May, 1893, Dr. W. E. Christensen communicated some comments on the Witzel and Herbst methods of treating devitalized pulps, and pointed out that the real effect aimed at by the two German dentists was the mummification of the pulps left untouched in root canals

Previous to reading about "this treatment, which we may call simple, and at the same time scientific," I had

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*Since publishing an article by Dr. Waas in which he referred to this paper by Dr. Soderberg we have been inundated with requests for information contained therein. Our correspondents have been referred to the publishers of the *Cosmos* with the result that the particular number of the *Cosmos* has been exhausted. As we are still receiving requests for the article, it is now reprinted to satisfy the demand.—EDITOR.

followed the usually thought and practiced methods of treating devitalized pulps, viz., to give my patients just the amount of strain and pain equivalent to the amount of my own bulldog perseverance with that exquisite instrument of torture—the nerve broach; then *trying* to fill the canals with gutta-percha or asbestos fibers saturated with some antiseptic; and then—well, the final result was not always my patient's comfort any more than my own glory.

I discarded the old method and adopted Dr. Witzel's, commencing by using the following modified formula (his paste, as formulated by Dr. Christensen, being too thin to be workable):

Hydrag. bichor. corr., gr. xxx;
Morph. muriat., gr. xv;
Ac. phenyl, gr. x;
Ol. Menth. pip., gtt. j;
Ol. caryophyl., gtt. j;
Alum. exsiccat., q. s., to make stiff paste.

This paste had, however, the drawback which all pastes containing mercury have—it caused discoloration of the tooth, at least when used in connection with steel instruments and amalgam.

Shortly afterward [September, 1893), the *Dental Cosmos* brought out Dr. W. D. Miller's valuable contribution, "Concerning Various Methods Advocated for Obviating the Necessity of Extracting Devitalized Tooth-Pulps," and I at once commenced to experiment with different pastes to find one which would cause mummification of the pulp without discoloration of the tooth.

The properties of an ideal mummification paste can be shortly described thus:

1.—It must contain an antiseptic sufficiently strong to prevent decomposition taking place while mummification sets in. Once mummified, the pulp is (so at least, I believe) not very likely to become decomposed and putrid.

2.—It must contain an ingredient which will, as quickly as possible, cause mummification (drying, shriveling) of the pulp tissues.

3.—It must contain a substance which, in conjunction with the other ingredients, will impart a white color to the mummified pulp, and prevent discoloration of the tooth.

4.—It must contain an agent capable of binding the whole compound together in a pasty state, and making it penetrate deeply and quickly.

Dr. Miller enumerates yet other points; but the above are, I believe, sufficient for all practical purposes.

Besides Dr. Witzel's paste, as given above, I have experimented with three of Dr. Miller's formulæ, using glycerol as the binding agent, viz:

Sublimate } equal parts;
Thymol }
Glycerol, q. s.

Sublimate }
Thymol } equal parts;
Tannin }
Glycerol, q. s.

Thymol, q. s.
Ol. cassia,

Here, again, the advantage is—as pointed out by Dr. Miller—the discoloration of the tooth, bluish-black by the mercury, yellowish-brown by the oil of cassia. My test tubes further show that where tannin is used in connection with either of these, or any other paste—especially if glycerol be used as a binding agent—the discoloration is more marked.

Experiments with twelve other pastes, first in ten tubes, next with freshly extracted teeth, proved to my preliminary satisfaction that the following formula was the most reliable on the four points above enumerated:

Glycerol, ʒ i;
Dried alum, ʒ i;
Zinc oxide, q. s. to make stiff paste.
Thymol, ʒ i;

In this paste the thymol acts as the antiseptic, the alum as the mummifying agent, the zinc oxide as the coloring medium, and the glycerol as the binding and penetrating agent.

Bearing in mind Dr. Miller's favorable recommendation of thymol, I adopted it as my antiseptic, and I fancy that I shall not have cause to regret my choice. My reason for adopting dried alum was that its tanning properties are far superior to those of tannin or any other tanning agent—a statement which any practical tanner will indorse.* Further, dried alum does not discolor the paste, while tannic acid, if substituted for the alum in the above mixture, produces a dark-brown paste.

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*I have it on the authority of the senior partner of the largest tanning establishment in Sydney, (Ludowici & Sons), that an ox-hide can be tanned with dry alum in less than one-tenth the time that any other substance consumes in the process.

I need hardly point out that glycerol with its great affinity for moisture and its well known penetrative power, is an excellent carrying agent for all mummifying pastes; further, that no better coloring medium can be found for the purpose in view than zinc oxide.

The entire paste is, finally, non-irritating; I have, in fact, continually used it for other purposes, e. g., in deep cavities between pulp and filling material, etc.

I have used this particular paste for over twelve months, and, *so far*, not one single case out of a total of ninety-seven has given any after trouble (alveolar abscess). And here I may be allowed to state that neither have I, so far, had any after trouble with any of the cases treated with Mr. Witzel's paste (from August, 1893, to date). I am perfectly well aware that neither one year, nor two, is sufficient time to warrant a guarantee of absolute success, and I acknowledge the truth of Dr. Miller's words, "Granted that the pulp becomes sterilized by the operation, this does not say that it remains sterile indefinitely."

I must here point out that my claims as a bacteriologist are *nil*, and as far as experimental chemistry is concerned, my knowledge is only that of the average educated dentist. I am unable to make experiments with mummified pulps on infected agar culture, and I am unable to give the "higher scientific reasons" why and how the paste acts as it does. All I know is that it *does* act mummifying on the dead pulp, and that twelve months after that mummy is still a mummy, and not a soft, sinking horror.

My patients mostly belong to the so-called middle and working classes. For divers reasons, they are not as careful with their teeth as are the members of the more cultured and moneyed classes; they don't as a rule, think of visiting the dentist except when an exposed pulp acts as a vivid reminder. In short, my practice is such a one that

I have to resort to my devitalizing paste very frequently. Hence excellent opportunities to see and observe the effect of the mummification paste. (And hence, also, the "kind o' sickly smile" wherewith I point out to my pupils Dr. Miller's angelic advice: "One or two cases every month —at least for the first year or two—is all that a careful dentist ought to risk in private practice." It is, however, a great consolation to me to read in the same article that over two hundred cases were treated with Dr. Miller's paste at the Dental Institute of the University of Berlin, with only one failure on record). I have tested the action of the mummification in the way that conforms best with my bent of mind and my inferior staadard of scientific education: I have removed test fillings three, six, nine and twelve months after the pulp treatment took place. In all cases the same satisfactory result observed—mummification of the pulp. One case I especially wish to record. I had occasion to extract an upper third molar treated seventeen days previously. On immediately splitting the tooth, I found the pulp in the root canals perfectly mummified down to the very foramina. Whether the experiments are carried out with the teeth *in situ*, or with extracted teeth, the mummified pulps always present the same appearance, viz.; a perfectly dry, parchment-like mass, with a faint odor of thymol, and a whitish color.

My mode of procedure is as follows: After the pulp has been perfectly devitalized (arsenic, cocaine, alum, equal parts, glycerol, q. s., sealing with sticky wax), I open up the main pulp chamber and drill out its dead contents, leaving the root canals untouched. I then fill the chamber with paste, and with a flexible Donaldson bristle gently prick the paste into the pulps left in the canals (this, however, is not absolutely necessary). I now seal with cement and insert amalgam or gold, as the case may be. I use rubber dam or cup where possible, otherwise Sperling's rolls—the main thing to keep out the saliva, at least until the first piece of amalgam has been inserted and burnished round.—*Items of Interest.*

ARTICLE II.

OPEN MAXILLARY SINUS WITH CONCOMITANT MAXILLARY SINUSITIS.

FANEUIL D. WEISSE, M. D.

Read before the First District Dental Society of the State of New York, December 13th, 1898.

In order to have a proper conception of this condition I propose to preface the direct consideration of the subject with some brief practical remarks on the anatomy and physiology of the maxillary sinus, together with a review of the causes which lead to the development and perpetuation of open maxillary sinus with concomitant maxillary sinusitis. I trust that I may not be regarded as too iconoclastic or revolutionary in my views, and that they may commend themselves as founded on anatomical, physiological and pathological conditions; the therapeutical indications to be fulfilled and the means employed in carrying out the same have been proven by repeated experience in practice.

Anatomy.—The sinus maxillaris, maxillary sinus, antrum, and antrum of Highmore are the several names given to the cavity in the body of the superior maxillary bone. (Nathaniel Highmore, an English physician, born 1613, died 1684, is usually thought to have been the first who described this cavity. This is an error, as it had been described by earlier anatomists, Galen described it under the name of "sinus maxillare." All English writers since Highmore have designated it as the "antrum of Highmore)." The proper anatomical name for this cavity is *sinus maxillaris*, or maxillary sinus, thus associating it, as it should be, with the other diverticula from the nasal cavity. The names "antrum" and "antrum of Highmore" should be discarded. These sinuses, like those in the body of the sphenoid and the frontal bones and the cells of the lateral masses of the ethmoid bone, are cavities hollowed out of the bone structure and lined by periosteum and mucous membrane continued into them from the nasal cavities.

The walls of a maxillary sinus form the body of a superior maxillary bone, which has the shape of a vertical wedge; the apex of the wedge is at the malar articulation of the bone; the base forms the outer wall of the nose cavity; the superior face forms the floor of the orbit; the exterior face forms the internal wall of the zygomatic fossa; the anterior face forms the facial surface; the inferior face —forming the floor of the sinus—has developed upon it the alveolar process of the bone. It is to be noted here that the sinus has its floor structure proper before the development of the scaffolding structure of the alveolar process for the lodgment of the roots of the teeth, and after the absorption of the alveolar process consecutive to the loss of the teeth. In illustration of this I show you these two skulls; one of about the period of birth, and the other at the period of old age, after the teeth have been shed; in both specimens a perfect floor or inferior wall of the maxillary sinus presents.

The roots of the teeth of the upper arch are seemingly projected as if to perforate the floor of the sinus, but in reality the alveolar process develops so as to socket the entire roots of the teeth exteriorly to the proper osseous floor of the sinus. At times the encroachment of certain teeth, usually the second and first permanent molars, is such as to raise the floor of the sinus into elevation. In these cases, always the alveoli are lined by the tissues at the apical spaces at the roots of the teeth, while the sinus, opposite to the alveolus, is lined by a portion of the periosteum and mucous membrane common to the entire sinus cavity. It is stated by some authorities that the floor of the sinus is at times perforated by the roots of the second or first molar teeth, but these instances are probably from post-mortem specimens or after pathological conditions had existed in the alveolaris of the root involved. In post-mortem specimens presenting perforation, the perforations are due to the handling in the cleaning and the process of maceration of the bone; while in pathological specimens perforations are due to destruction by necrosis of the osseous floor of the sinus. In this skull you will see an illustration of the usual perforation—a round hole found in the inferior wall of the maxillary sinus, caused in all probability by the process of maceration of the skull.

The roots of the teeth—cuspids, bicuspids and molars—as socketed in the alveolar process, the osseous scaffolding developed for their lodgment inferiorly to the special osseous flooring of the sinus, have varying relations to the cavity of the sinus, that is, their roots vary in the nearness of their approach to the cavity of the sinus. In this specimen the upper cuspid, bicuspids and molars of a side have been extracted; the labial walls of the alveoli have been broken away, and the interior wall of the sinus has been broken away, so as to expose the interior of the floor of the cavity of the sinus. This preparation thus enables us to appreciate the nearness of approach of the roots of these teeth to the cavity of the sinus. The cuspid alveolus runs up into the root of the nasal process of the superior maxilliary bone, entirely internal to the cavity of the sinus and separated by osseous tissue from it. The first and second bicuspid alveoli, less deep, and lodged entirely in alveolar process, are well separated by osseous tissue from the sinus cavity. The first molar alveolus, bedded in alveolar process, approaches closer to the sinus cavity, but it is separated from it by a well-defined thickness of osseous tissue. The second molar alveolus, lodged in alveolar process, approaches much closer than any of the others to the sinus cavity, being separated from it by only a thin layer of osseous tissue. The third molar alveolus, lodged in alveolar process posteriorly to the sinus cavity, is well separated by osseous tissue from the cavity of the sinus. From the specimen, the order of the nearness of approach of the roots of these teeth, as lodged in the alveolar process, to the cavity of the maxillary sinus is as follows: Second molar, first molar, second bicuspid, third molar, first bicuspid and cuspid.

It is stated by embryologists that the maxillary sinus is present as early as the sixth week of fetal life; thereafter it increases in size with the development of the bone. In adults it is larger in males than in females, but it is subject to many variations in size, even in the same subject on the two sides. The base wall of the body of the bone, which is also the base of the sinus cavity, forming the outer wall of the nose cavity, presents a large deficiency, which is greatly diminished by the application to the internal face of the body of the bone of portions of the palate, ethmoid, and turbinate bones. The comparatively small aperture remaining, located in the middle meatus area of the nose cavity, is the point of communication of the sinus with the nose cavity. The posterior, external, superior, and anterior walls of the sinus are tunneled by canals for the transit of vessels and nerves to and vessels from the teeth, the mucus membrane of the maxillary sinus, and the gums. The exterior of the body of the bone is covered by periosteum and the superimposed parts. The interior of the maxillary sinus is lined by a delicate and peculiarly structured periosteum, which in turn is lined by a closely adherent mucus membrane; the later is rich in blood-vessels, lymphatic vessels, and nerves, and particularly rich in mucous glands of large size and varying shapes. With some modification, the periosteum and the mucous membrane of the maxillary sinus are identical with those of the nasal cavity and its other diverticula. The osseous borders of the aperture of communication between the maxillary sinus and the nose cavity are covered by periosteum and mucous membrane in transit from the nose cavity into the sinae, and their presence narrows the opening to the size of admiting a probe; a quill, or even a larger body. The circumferential mucous membrane at this opening is to be remembered, as in some cases of maxillary sinusitis its swelling may obstruct the flow of pus from the sinus into the nasal cavity.

Physiology.—The functions of the maxillary sinus are:

1. Respiratory, in common with the other diverticula of the nose cavity, in that they are chambers for the warming of the air. Air, always being present in them, is warmed by contact with their interior mucous membrane, which contains capillaries filled with blood at 98½° F., which warmed air is drawn down by inspiration into the larynx, trachea, etc.

2. Vocal, as reverberating cavities for the modulation of the voice sounds.

Pathology.—Diseases of the maxillary sinus may be divided into:

1. Primary or initial (not under consideration in this article), due to pathological changes of the linings or walls of the sinus.

2. Secondary or sequential, due to cases exterior to the sinus.

The secondary or sequential diseases of the maxillary sinuses are:

1. Empyema.
2. Maxillary sinusitis.

1. *Empyema of the maxillary sinus* is the correct pathological name to apply to the presence of pus in this cavity. (I have always maintained that the term "abscess" as applied to the maxillary sinus is a pathological misnomer. The pus of an abscess, resulting as it does from inflammation of the central tissue of a part, is lodged within tissue, while in the case of pus in the maxillary sinus the pus is in an actual cavity. I was much pleased in reading the following in Mr. Salter's article in Holme's "System of Surgery:" "The term 'abscess of the antrum' conveys a wrong impression of the real nature of this disease; it is not the suppuration of inflamed parenchyma, but the occlusion

in a cavity of the purulent secretion from the surface of a mucous membrane which lines that cavity)." This condition may be due to the following causes:

a. The entrance into the sinus of pus from an abscess of a contiguous alveolus or from a contiguous sinus, or from the nose cavity.

b. The presence of pus in the sinus from maxillary sinusitis.

2. *Maxilliary sinusitis* is a name which I would give to exudative inflammation of the mucous membrane lining the sinus. The causes of maxillary sinusitis are:

a. Acute and chronic rhinitis.

b. Foreign bodies in the sinus.

c. Traumatism.

d. Inflammation or abscess in contiguous alveolar cavities, with consecutive abnormal opening into the sinus.

a. Acute and chronic rhinitis are, because of the continuity of the mucous membrane from the nose cavity into the sinus, self-evident causes.

b. Foreign bodies in the sinus are most often the result of accidents in the course of the, at present, usual treatment of open maxillary sinus.

c. Traumatism is a cause at all ages. Cases in infants a week after birth have been reported where maxillary sinusitis had been induced by trauma, due to forceps delivery.

d. That morbid conditions of the teeth—molars, bicuspids, and cuspids—and their alveoli are the most frequent exterior causes of open maxillary sinus with concomitant maxillary sinusitis is almost the universal opinion of surgical authorities, and such has been my experience for the past twenty-five years. In adults, in by far the majority of cases, the following is the history of the prodromata of an open maxillary sinus with concomitant maxillary sinusitis: One of the teeth (most often the second permanent molar) becomes diseased by caries of the tooth extending to exposure of the pulp; periodical attacks of pulpitis follow. If the tooth condition is neglected pericementitis and alveolar abscess develop; the abscess may open into the sinus, inducing empyema, or it may open at the labial wall of the alveolus. (The contiguous inflammation of the alveolus causes irritation of the periosteum and mucous membrane of the sinus, and a secondary or sequential maxillary sinusitis is induced, which manifests the following symptoms: Deep-seated discomfort or pain in the cheek area; this however is usually referred to the affected tooth, and some pain on pressure over the wall of the sinus. This insidious sinusitis, coincident with the alveolar inflammation, has its focal point at the floor of the sinus, directly opposite the diseased alveolus, and a protective formation of bone occurs at this point, which thickens the osseous floor of the sinus between the alveolus and the sinus cavity. In Dr. Cryer's latest article on the maxillary sinus there is a beautiful illustration of the formation of new osseous tissue at the floor of the sinus in a case of this kind. This thickening of the bone at this point is an attempt to protect the cavity from the intrusion into it of the products of inflammation existing in the alveolus). If extraction of the tooth is delayed, the confined pus, pressing on the walls of the alveolus, interferes with their blood-supply, and its osseous structure undergoes degeneration, by which it is rendered friable. The same change also takes place in the osseous septum between the alveolus and the sinus cavity. Finally the tooth is extraced, and, although the greatest care may be taken in the operation, more or less of the alveolar wall is comminuted, owing to the degeneration of the osseous structure; and after the extraction there will be found an opening into the maxillary sinus.

As a rule, the opening into the sinus is not at first recognized, attention being called to the condition by the patient's complaining of deep-seated pain in the superior maxillary region; that air and sometimes fluids pass from the mouth to the nose, and at times that there is a discharge of pus from the nasal cavity of the side. There may also be a change in the patient's voice. The symptoms will be attended by persistent non cicatrization of the alveolus, with continued discharge of pus from it. An examination with the probe will, in such cases, determine an abnormal opening into the sinus, and account for the existence of the concomitant maxillary sinusitis. Sometimes an open sinus with concomitant maxillary sinusitis is not preceded by exactly the above prodromata; there may be the following variation: Retained roots of teeth, usually those of the upper second molar, that have been keeping up a chronic pericementitis, with, of course, free drainage at their distal peripheries, which has induced degenerative changes in the osseous walls of the alveolus and the septum between the alveolus and the sinus cavity, with concomitant chronic maxillary sinusitis. These roots being extracted, an open maxillary sinus is present, and there will be a continuance of the maxillary sinusitis.

Treatment.—It is not necessary to detail the methods of treatment resorted to—of injections of irritating antiseptics and stimulating solutions into the sinus—or to speak of the usual measures resorted to to keep the opening patent by tents and carefully adapted drainage tubes. With all due respect, I have never resorted to these measures, as I have regarded them as tending to aggravate and to perpetuate the abnormal conditions. Long-standing cases of open maxillary sinus with continuous discharge of pus, after active local treatment, are too often thought to be due to some undiscovered condition of the interior of the sinus—ulceration of its mucous membrane or necrosis of its walls—and heroic measures are resorted to expose its interior by enlarging the alveolar opening or removing its anterior wall or opening the cavity at the inferior meatus of the nose, for the purpose of freer drainage or of curetting interior. All such conditions, if present, I claim will have been due to the treatment, and that they might have been avoided by an early, conservative local treatment, with attention to the systemic condition of the patient.

The local and systemic treatment of a given case of open maxillary sinus with concomitant maxillary sinus with concomitant maxillary sinusitis should be determined upon after having appreciated the following conditions:

1. Determine the exact condition of the sinus by the character and quantity of the discharge from it.

2. Ascertain the existence of any peripheral sources of irritation to the sinus.

3. Determine the existence of any systemic condition likely to impair the recuperative powers of the system.

4. Realize the nature of the changed physiological state of the sinus cavity.

1. The character and quantity of the discharge will indicate the degree of inflammation of the mucous membrane of the sinus. Almost invariably it will be found to be in a septic condition, evidenced by more or less pus flowing from the abnormal opening, and at times from the nose cavity of the side; and hence the perpetuation of the sinusitis. To meet this condition the patient should be given a suitable syringe and instructed how to inject the sinus by the abnormal opening. This he should do at least five times a day with solution of sodii hyposulfitis, one drachm to one ounce of water. As this treatment is carried out the character of the discharge should be noted, as to whether it loses its purulent character and becomes mucus. When tho discharge has become mucus, and has continued so for some time, there will be noticed a gradual closure of the opening, with a change from redness and swelling of the edges of the opening, while the discharge was purulent, to a normal tint of the edges of the orifice. Under the latter conditions the syringe nozzle will not enter the opening as easily, and attempted injection is attended by a certain amount of backflow. Under these circumstances no force should be used to effect injection of the cavity, and as the closure of the opening proceeds the injection should be diminished in frequency, and finally suspended.

2. All existing peripheral sources of irritation should be treated. Remove any roots of teeth present in any of the alveoli of the upper jaw of that side, and keep their alveoli thoroughly asceptic until they are cicatrized. Any teeth in the upper jaw that are dead should be thoroughly treated by removing pulps, cleaning out root-canals, etc. Any rhinitis of the nose cavity of the side should be treated.

3. If any deviation from the normal of any important function exists, the patient should be placed under a regimen of life and remedies calculated to correct the same, so as to bring about a systemic condition of good health. I have improved many cases and put them on the road to a cure by careful attention to the general health. This latter indication is almost invariably neglected.

4. To realize the nature of the changed physiological state of the sinus cavity we should appreciate that it is a secluded cavity, extremely susceptible to irritation, even by slight modifications of its normal condition; that the only access of air to and from it is at the opening by which it communicates with the nose cavity; that normally, air entering and leaving it never passes through it by currents; that its mucous surface is continually bathed by a secretion from the large mucous glands of its mucous membrane, which protects it from irritation from the air entering it. With an abnomal opening into it an abnormal amount of air reaches it, and with the opening at an alveolus each inspiration and expiration is attended by a current of air passing through it from nose to mouth, and the reserve with the mouth open. This abnormal access of air in currents dries the surface of the mucous membrane. This in itself is an irritation to the membrane which tends to perpetuate the maxillary sinusitis. A parallel condition is seen, but to greater degree, where the mucous membrane of the nose cavity is subjected to abnormal access of air, in cases of fissure of the soft and hard palate. In this latter case a chronic rhinitis develops, which induces a permanent

induration of the abnormally exposed and dry mucous membrane, thus adapting it to the existing abnormal conditions. Furthermore, with the maxillary sinus open to the buccal cavity, eating and drinking is attended by the ingress of food and drink into the sinus and through it to the nose. These abnormal conditions realized, a most important indication of treatment presents; that of restoring the open maxillary sinus, as nearly as possible, to its normal physiological state of a secluded cavity. To effect this the following measure has been resorted to with success: Close the face of the abnormal aperture by a closely-fitting hard-rubber cap, which should overlap upon the labial and palatal surfaces of the gum and be held in place by suitable fixation to the adjacent teeth. This is be to worn during the day, especially when eating and drinking. After each meal it is to be taken out and carefully washed in the hyposulfite solution used for the injections. At night it is to be removed. In the morning, before introducing the cap, after meals, before replacing the cap, and at bed-time, after taking out the cap, are the times when the injections should be made into the sinus.

This cap over the abnormal opening restores the sinus as nearly as possible to its physiological state of a secluded cavity; it prevents undue access of air and currents of air, which cause the mucous membrane lining the cavity to resume its normal moist condition. Irritation removed, the mucous glands resume their secretion. As worn at meals, it effectually prevents the entrance of fluids or particles of food; and it does not interfere with the discharge of pus or mucus, as they readily overflow the cap.

During the past twenty years and more I have treated not a small number of open maxillary sinuses with concomitant maxillary sinuses of varying periods of duration, and after they had undergone manifold methods of treatment and operative procedures. I never have had a case that came to me soon after the abnormal opening was developed, before having undergone any treatment, that I have failed to arrest the existing maxillary sinusitis and to induce a prompt closure of the abnormal opening. In those that I have not seen early enough, where the opening had been enlarged by operation and the mucous membrane had been subjected to irritation by remedies and the wearing of tents and drainage-tubes, I have succeeded only after prolonged treatment in bringing about a favorable result; and in the cases that had undergone heroic operative treatment I have only been able to render them more comfortable. The experience that I have had warrants me in making a crusade on all irritating local treatment and on all operative measures in cases of open maxillary sinus and concomitant maxillary sinusitis, and in believing that the immediate carrying out of the treatment outlined above will be attended by good results.

The following is an epitome of the treatment to be carried out;

1. Render the sinus aseptic by the mildest possible injections (sodii hyposulfitis one drachm, water one ounce), watching their effect on the discharge (changing from purulent to mucous), and be governed accordingly as to their continuance.

2. Remove all peripheral sources of irritation to the sinus.

3. Place the patient, according to conditions, on a proper regimen of life and course of medication to induce a healthy systemic condition.

4. Restore the sinus as nearly as possible to its physiological condition as a secluded cavity, by a suitable hard rubber cap worn over the abnormal opening.—*Cosmos*.

ARTICLE III.

WHAT ARE THE BEST MATERIALS FOR FILLING CHILDREN'S TEETH.

C EDMUND KELLS, JR., D. D. S., NEW ORLEANS, LA.

A five-minute paper upon such a prolific object must of necessity be concise, hence to the practical treatment of the temporary teeth at once.

These will be divided, from a clinical standpoint, into classes: A, good: B, bad; C, very bad.

Class A. Good teeth, of course, are those to which, profitable by our teachings, the mother has given good care and the little patient brought to us at an early age, say two and a half years. At this period the teeth are in perfect order, clean, and pleasing in appearance.

The patient is examined every three or four months, and from time to time a spot of decay may appear in the crowns of the molars, which is filled at once with amalgam, however tiny the cavity may be. At the same time, whenever necessary, all the exposed surfaces are polished with orange-wood and pumice, or the engine and a rubber cup may be used. The approximal surfaces are also kept bright by pumice and floss silk.

The incisors, under this care, remain perfect until shed.

The treatment these teeth receive is mostly preventive, and the time (and money) so spent is well invested.

Class B. These patients are brought to us probably after a night of suffering, and say at five years of age, and bespeak at once the neglect they have endured with compound approximal cavities in the molars, pulps nearly or quite exposed, and perhaps an abscess in progress of formation. The incisors also may be involved. The patient is not a type of good health, but nervous, and afraid of everything in the office, ourselves included.

The first step to be taken is to gain the child's confidence, which can only be accomplished by inflicting no pain at the first visit. Some small crown cavity (usually to be found) is slightly prepared and filled with cement, and the patient is greatly encouraged by the idea of having had a tooth filled without pain. By the time all of the other work is completed this filling (?) is to be removed, the cavity properly prepared and filled with amalgam.

The large compound approximal cavities are in due time prepared as thoroughly as possible, care being taken not to exposs the pulps; they are cauterized one or more times with silver nitrate, filled with amalgam if safe, or, if not, with a chlorid of zinc cement. If all progresses smoothly, at the end of six months or a year they may be refilled with amalgam.

Sometimes, when the teeth are crowded, after cauterization, gutta-percha is packed into two facing compound approximal cavities, and allowed to remain for a month or more, when a filling can be more satisfactorily inserted.

If the pulps are exposed after the use of the silver nitrate a cream of oxid of zinc and creasote is flowed over the exposed portion previous to the insertion of the filling.

These pulps, if thoroughly exposed, will die, but probably painlessly, and the tooth may remain comfortable for some time.

Any tooth in this condition at the age of five will not survive its period of usefulness, but must be lost sooner. However, if the second molars can be held in place, at almost any cost, until the first permanent molars have come through and are well articulated, this should be done, after which their loss is not so serious.

It is not my practice to fill the root canals of temporary teeth, consequently the treatment of these teeth is merely palliative; when that fails to give relief, extraction is resorted to.

Class C. Under this we will describe a poor little suffer of two and a half years of age, with all the teeth "rotted to the gums," as we are told, and which description is in fact more accurate than elegant. True enough, the crowns are gone, but in many the pulps are still alive and exquisitely sensitive. Here nothing can equal the cauterization by silver nitrate, which, repeated at intervals, will allay the sensitiveness, and is all that can be done for the little sufferer.

When a girl who has been under my care since childhood marries, she is impressed with the necessity of caring for her children's teeth. She is taught to brush, not rub with a rag, the infant's teeth from the time of their appearance; at first with clear water, and later, when the child is old enough not to attempt to swallow everything that is put in its mouth, with prepared chalk. Floss silk should also be passed between them daily, and when the child is old enough the mouth should be thoroughly rinsed with diluted lime water night and morning. This constitutes the care the mother is instructed to give the temporary teeth, besides which they should be sent to me for an examination three times annually.

The Permanent Set.—The judicious treatment of the first permanent molars is of paramount importance. In my practice there is a tendency to crowded arches, and very frequently the extraction of four teeth becomes advisable.

If the first permanent molars erupt in a defective condition, which they very frequently do, and break down immediately, they are nursed along until the patient reaches the age of eleven, and then extracted. Removing them at this age leaves the twenty anterior teeth for mastication, and allows of the eruption of the second molars in in a perpendicular position and almost in the places of the first molars. Meanwhile the bicuspids have dropped back a lttle, and the entire arch at the age of fifteen is roomy and in good condition.

If the first molars are removed after the appearance of the second molars these are sure to tip forward more or less, and the crowded condition of the anterior teeth is not so readily overcome, and, altogether, a bad result is sure to obtain.

For nearly twenty years the judicious extraction of the first permanent molars has been practiced by me, and the satisfactory result so obtained is a daily object-lesson among those patients who are still in my care.

When the first molars are good, one set of the bicuspids, either the first or second, are oftentimes removed with the best results.

As the teeth of the permanent set are erupted they are watched carefully, at least two visits a year being insisted upon. The smallest pits that penetrate through the enamel are filled at once. If these occur before the teeth are fully erupted they are filled with oxychlorid of zinc first, and later with amalgam or gold. If the teeth are soft, gold is never used. Amalgam is a very satisfactory material for the fissures of bicuspids of children.

Sometimes these buccal and fissure cavities are quite deep, though the enamel-margins are quite hard; in which cases the cavities are lined with either gutta-percha or cement, usually the latter, and gold or amalgam completes the filling.

When all is ready for the filling the cavity is swabbed out with creasote (Morson's only), and then dried with hot air. This will leave the walls in a glistering condition; and if any spot of decay or softened tissue remains will at once discolor it, and it is removed.

When very deep cavities are found the enamel borders are prepared thoroughly, but the decay over the pulp is not entirely removed for fear of exposing the same. This is coated with a cream of oxid of zinc mixed with creosote, and dried and covered with oxychlorid. Later a part of the cement is cut out, and amalgam or gold packed over the remaining protecting layer.

The oxychlorid of zinc is a treatment of the tooth under which the tooth will improve. The zinc phosphate is a filling-material only, porous to a certain extent, and does dot benefit the tooth otherwise thus serving as a filling material.

The approximal surfaces are watched carefully, and upon the slightest suspicion the teeth are wedged apart and the discoloration removed with fine polishing strips; after which the surfaces are brought to a high polish by the use of lamp-wick carrying moistened pumice. A carrier for this purpose, devised by my father some thirty or more years ago, I have never seen equaled, so I present one for your inspection.

Approximal cavities in children under fifteen years of age are never filled with gold, but with oxychlorid of zinc. Usually the dam is applied, the fillings inserted, patient seated in another room with a book or magazine for from forty-five to sixty minutes, the meantime being employed on other patients, and so is not wasted. The cement is then carefully finished, and paraffin burnished on with a hot instrument.

It is not unusual to find at the age of twelve or thirteen years cavities on the approximal surfaces of all the lower incisors, and even cuspids. Experience and observation have taught me long since that gold will not save such teeth at all, while the above treatment will. I have during this past month filled such teeth with gold for a miss of nineteen years, for whom they were filled with cement in May, 1888, or ten years ago, the cement fillings having wasted but slightly during all this time, and the teeth in the best of condition.

It is essential that a child be taught how to brush the teeth properly, and for this purpose I keep in my cabinet a tooth-brush and set of teeth mounted on continuous gum, and with which I give a careful object lesson.

Finally, when all other work is completed, the teeth are thoroughly cleansed and polished, and great stress laid upon the necessity for the patient's keeping them in that condition.

I am told that the teeth of children in this section will not stand the same treatment as those in the North. Of this I know nothing personally, but of the utter failure of gold in children's teeth I do not judge by my own work alone. Scores of my litile patients go off to school, and have gold fillings inserted by operators of the best reputation, which, however, soon fail. So my hearers of a distant clime must please bear climatic considerations in mind when criticizing my methods, and also my work when it falls under their view.

H. S. AMBLER, D. D. D., M. D., CLEVELAND, O.

Tin has physical properties which render it desirable as a filling material; it is about one-fourth as tenacious and malleable as gold. Again, gold is nearly four times as good a conductor of heat, and six times as good a conconductor of electricity; and its capacity for absorbing heat is nearly twice as great. On account of its pliability it is easily adapted to the walls and margins, and a perfect fit is made, thus preventing capillary action and preventing further caries. Of all the metals used for filling, it is the best tooth-preserver and the most compatible with tooth-substance, and it does not change form after being packed into a cavity.

Tin possesses antiseptic properties which do not pertain to gold for arresting caries in imperfect teeth, and, owing to its therapeutic quality, and being a rather poor conductor, there is a strong probability of calcification taking place under it.

In a few cases tin does not discolor, in others it presents a grayish appearance, but in the majority it is more or less blackened on the surface, the metallic oxid penetrating the dentin slightly and acting as a protection, because it is insoluble; but in either event the tooth is preserved. If the cavities were sensitive when filled with tin, and in future years it is removed for the purpose of filling with gold, it is generally found that the sensitiveness has disappeared.

Many failures are made in filling the anterior teeth of children with cohesive gold, but if we work as carefully and try as faithfully with tin, good results would be produced and many teeth would be saved; and; as tin can be cut easily, more cervical margins would be finished smoothly. The objection that tin is too soft does not have any great weight when used for approximal fillings which do not include the incisive edge or occlusal surface.

For some time we have been using foil, prepared according to our suggestions, manufactured by The S. S. White Company as a special product; with it a filling can be made which is nearly twice as hard as the ordinary tin filling. This foil is more tenacious and cohesive than any we have ever seen. For eight months it has given complete satisfaction in the Western Reserve University Dental College clinic, and in the technic work it has entirely superceded gold foil.

The idea that gold is the best filling material in all cases has been completely refuted by the new "New Department creed;" therefore it is our duty to fairly consider and faithfully try other materials, to the end that we as dentists may be able to save a larger number of carious teeth.

Good tin foil, in proper condition; is cohesive when force is applied, and can be used for filling in the same manner in which cohesive gold is used; and a tin filling properly condensed, layer by layer, is a solid mass which can be cut or filed. Cavities are generally prepared the same as for gold, then a stripe of tape, narrower than the orifice, is folded once or twice at the end and placed where the filling is to be commenced, the tape being folded back and forth as the operation progresses by hand-mallet or hand-pressure; the finishing to be completed the same as for gold. For filling with a hand mallet use instruments with medium serrations, and a steady, medium blow with a four-ounce mallet; in force of blow we are guided by thickness of tin, size of plugger, depth of serration, strength of cavity walls and margins. The best results are only obtained by having absolute dryness.

Filling the anterior teeth of children with tin has been practiced by the writer more or less for thirty years, and he is convinced that such operations are practical and durable, and will last from five to twenty years, according to the quality of tooth-structure, size and location of cavity, care of the teeth, environment, and care with which the filling is inserted. In "Tin Foil and its Combination for Filling Teeth," recently published by the S. S. White Company, cases are recorded where tin fillings have lasted forty years.

Up to the age of fourteen years we find many teeth which are imperfect in structure; in such cases we advise tin, for as the patient advances in years the tooth usually becomes better, so that, if desirable, the fillings can be removed and saving operations made with gold. By treating cases in this manner very little, if any, tooth-structure is lost.

In filling these anterior teeth we suppose the cavities have been taken before they involve the incisive edge, but if the edge is involved the tin should only be rounded out, no attempt being made to restore a corner.—*Cosmos.*

ARTICLE IV.

SYSTEMIC REMEDIES IN DISEASES OF THE TEETH.

LEO GREENBAUM, M. D., D. D. S.

In compliance with the very courteous invitation of your committee I wish to present a short survey of systemic remedies which may be used in the treatment of diseases associated with the teeth. In doing this it is not my intention to enter into a discussion of the legal status or ethical propriety of dentists prescribing drugs for internal medication, but simply to point out the applicability of such medicines as adjuncts to local treatment. I will further limit my subject by considering only the systemic treatment of severe pains which frequently accompany dental diseases and which do not really yield to local treatment.

Among such conditions we find hypersensitive dentine. By hypersensitive dentine I mean a degree of sensitiveness in which the touch of an instrument produces a painful impression, and which interferes with the proper preparation of a cavity for the introduction of a filling; the use of a bur or excavator causing intense suffering to the patient. This condition is responsible, as we all know, for the wholesale neglect of the teeth on the part of the public. One experience is severe enough to strongly and permanently impress with dread of dental operations not only hysterical women but even strong men, and to cause them ever afterwards to neglect proper professional care of their teeth. Pathologists claim this hypersensitivity to be due to increased functional activity of the so called fibrillæ in dentine denuded of its protecting covering and thus exposed to external stimulation and irritation.

But this increase in the local irritability is not sufficient to account for the horror manifested by some of our patients at the sight of dental instruments, and which causes them instinctively to grasp the hand of the operator or to jerk the head back so as to avoid instrumental contact. This effect must fairly be attributed to causes other than the local condition. Therefore local treatment, such as the use of sharp burs, dehydration of the affected part by means of warm air, the application of alkalies or local anodynes, or agents which destroy the dentinal protoplasm—excellent in ordinary cases—is not sufficient to control these extreme ones.

The introduction of cataphoresis has helped very much to overcome such difficulties; but experience teaches us that patients who have once undergone the sufferings attendant upon the excavation of a cavity under such circumstances of hypersensivity are ever after rather difficult to manage before they can be induced to submit to the application of the electric current; and that in such cases it is not only better, but necessary, to produce some systemic effect by means of agents which either stimulate or diminish the perception of impression in the nerve-centres.

Various remedies have been suggested for this purpose, such as the inhalation of general anesthetics, chloroform and ether, in quantity sufficient to benumb sensibility; but there is decided objection to this mode of treatment on account of the disagreeable after effects liable to result and the danger to life lurking in these drugs.

The various coal-tar derivatives and the bromides have also been used; but the best results have been obtained by the use of the old-fashioned drug asafœtida. Asafœtida has a decided stimulating effect upon the nervous system, and produces a kind of pleasant intoxication which removes fear and overcomes nervousness. I have had several cases in which a patient on first consulting me was so overwhelmed with fear that it was impossible to attempt an examination; when the use of an explorer was out of the question, and even the mouth-mirror was carefully examined before its introduction into the mouth was permitted. In such cases good results have followed the administration of two three-grain asafœtida pills, the first one hour and the other a half hour before the time appointed for the operation. There is neither danger nor disagreeable after effects from the use of this drug, and it supports the patient's system and causes more ready submission to the operation.

Diseases of the pulp, such as the formation of pulp nodules, pulpitis, etc., are often associated with reflex pains in the face, side of the head, in the ear, etc., of intense character, entailing a great deal of suffering, and which require for their cure pulp devitalization. When this can be accomplished promptly the cause of the pain is removed and the patient relieved. But many cases present obstacles to the action of the devitalizing agent, as an inflammatory condition of the pulp arsenic will not act promptly, while in cases of pulp-nodules entrance to the pulp-chamber must first be secured. Occasionally it may be desirable to attempt pulp preservation. The consequent delay of the final cure would not satisfy the sufferer unless the neuralgic attack, for the treatment of which he consulted the dentist, were relieved. In such cases good results may be obtained from the internal administration of the coal-tar derivatives, such as acetanilide, phenacetin, and others. Experience in the use of these agents has demonstrated the fact that their effects are modified by individual peculiarities more frequently than any other group of medicines. I found that some patients were benefited by acetanilide, whereas upon others it had no effect, but phenacetin acted favorably; and in a similar manner all other drugs belonging to this group. This led me to the use of a combination of several of these medicines in one prescription, from which I obtained more universal good results than when using them singly. It seems that when in combination the therapeutic properties are acting conjointly in perfect harmony, while the toxic properties are more or less neutralized by each other; and even smaller doses of these analgesics when in combination are more powerful and more certain to alleviate pain than any one of them individually, and, above all, being free from the unpleasant symptoms frequently following a similar dose of any one of them. I have used the following prescription in many cases:

℞ Acetanilide, gr. viii;
Phenacetin, gr. xv;
Caffeine citrate, gr. xv.
Misce et ft. pulv. no. viii.
Sig.—One to be taken every two hours.

Since writing the above I have read an article in one of the medical journals in which a physician recommends the use of these combinations for reasons similar to those I have named. His prescription seems excellent, and I intend to try it at the first opportunity which may present itself.

℞ Antipyrin,
Phenacetin,
Quinine sulphate,
Powdered ginger, aa ʒ ss;
Caffeine citrate, gr. xv.
Mix and divide into fifteen capsules.
Sig.—One every two hours.

Doubtless every practitioner has had some experience with high-grade pericementitis, in which the tooth continues to throb and hammer with inflammation increasing in spite of the aconite and iodine applied to the gum, and in spite of the persistent application of drug after drug to the effected part until the mouth is blistered, the throat sore, taste temporarily destroyed, the patient made generally and wofully miserable, and the dentist, in sheer desperation, has sent his patient home with the assurance that he has used all known remedies and done all in his power; or, worse, has been guilty of malpractice in extracting the offending tooth.

In such cases good result may be obtained if in addition to the local treatment the following internal sedative is prescribed :

Potassii bromidi, ʒ ii;
Aquæ, f℥ ii. M.
Sig.—A teaspoonful every two hours.

Frequently these peridental troubles, despite all treatment, will run to an abscess; or before the case reaches us it may have gone beyond the point when resolution could be established. The pain associated with the formation of pus and the final formation of a fistula is very intense, in many cases making the patient quite feverish and generally depressed. To allow the patient to bear the intense suffering and steady torture accompanying degeneration, causing him to pace the floor in agony until the case is relieved by the usual discharge, is akin to barbarism. For many years in such cases I have given the patient a capsicum bag with instruction how to apply it, so as to hasten the opening of a fistula, suggesting that it be applied before retiring and that the following be taken:

Chloral hydratis, gr. xxv;
Potassii bromidi, ʒ i.
Misce et ft. pulv. no. iii.
Sig.—One to be taken before retiring.

Though I have used this almost universally in such cases during the past ten years, I cannot recall a single instance when the patient failed to spend a comparatively comfortable night, and in the morning pus was discharging through a fistulous opening. Choral is looked upon with disfavor by the medical profession on account of the depressing effect upon the heart which is attributed to it. But the manner in which I recommend my patients to take it—that is, before retiring—seems to obviate that danger. I can say with perfect assurance, in consequence of the experience I have had with the above prescription, that there is no danger in the dose given when taken in the manner prescribed; and that I have obtained more satisfaction and my patients more comfort in cases where its employment is indicated than from any other drug.

A word about capsicum bags. I do not want the proper kind to be confounded with the so-called capsicum plasters which are now so universally sold by druggists for the cure of toothache. The first are made by filling with powdered capsicum a bag one side of which is made of rubber to protect the cheek, the other of muslin to permit the fluids of the mouth to enter, dissolve, and act on the tissues covering the root or roots of the teeth against which these bags are placed. The second kind are not very strong and are really worthless for the purpose of counter-irritation.—*International Dental Journal.*

ARTICLE V.

NERVOUS PATIENTS.

DR. WALTER F. LEWIS.

We speak of a person as being nervous, or in a condition of nervousness, as indicating an abnormal condition of the nervous system, while it may mean a condition of health as well as disease, as, for example, we speak of a "man of nerve," "a strong nervous man," or a "weak nervous woman," according to the different acceptation of the word nervous. The nerves are so intimately connected with the whole body that we ought to find healthy and vigorous nervous conditions in a healthy body, and vice versa, and this in a large measure is doubtless true; but there may exist an hereditary predisposition which interferes with the normal functions of the nervous system in an apparently healthy body, thereby causing us to estimate greater fortitude and power of endurance than the nerves will sustain. With the ancients the nerves were so intimately associated with the tendons and ligaments that nervousness indicated strength, etc.

Without, therefore, going into any homily upon the nervous system, I desire to make some suggestion that may be of value to us in our contact with that class of people whom I have pleased to denominate "nervous patients," those who suffer the most acutely, and make operations in the oral cavity more difficult than any other class. The close relationship of the brain with the nervous system makes the dread of the operation almost as terrible as the operation itself. It goes without saying that the average patient dreads the dental chair. "I hate it, I hate it, and who shall dare to chide me for hating the dental chair" is a sentiment which finds lodgment in the breast of all "nervous patients." The dread of suffering is greatly intensified by this condition, and suffering to such patients is one of the greatest factors in human experience. It enters into every avenue of life. It stands like a grim specter in every household. It looks upon every scene of joy and mirth. It enters the palace and hovel alike. The heart that throbs beneath ermine and velvet dreads it as well as that of the savage in his tepee. It comes unannounced in the darkest midnight hour, and likewise under the blaze of the noonday sun. It is no respector of persons, breathing its blighting poison upon the helpless infant, as well as on the vigorous and strong. It lurks beneath the smile of the beauty of the drawing room, and shows its masked face behind the fervid utterances of the orator. It is not limited to space, but pursues its victim with relentless energy to the highest mountain peak or the lowliest vale, and it is this influence which causes our nervous patient to dread dental operations. The question naturally arises, "What are we going to do with these conditions which are not mere idiosyncrasies, but are conditions over which the patient can have no possible control?" We offer some suggestions which may or may not meet with your approval, but if they are instrumental in causing you to give greater consideration to this subject, the object of the paper will have been accomplished. It is of paramount importance, when these patients present themselves for operations, to study carefully their peculiarities of temperament, habits of thought, etc. If necessary, humor any or all of their harmless whims, agreeing with them in so far as is consistent with true professional dignity, and above all strive to gain their confidence, without which it is hardly possible to operate in a satisfactory manner. Avoid all display of instruments or appliances which have a tendency to excite apprehension that pain lurks behind their use. Cultivate a bright and cheerful manner without descending to frivolity or buffoonery. Do whatever is required in prompt and reliant manner without any unnecessary motion or display. Make the sitting of such length as is compatible with the ability of the patient to bear the nervous strain of the operation. Never, under any circumstances, go beyond this limit. There are many operators who excel in manipulative ability, but who are totally devoid of a proper discrimination as to the patient's power of endurance. How often we have heard the remark, "I sat in the chair three, four or five hours," or, possibly, "all day;" "had a dozen or more cavities filled, and was utterly used up for the week following." Such lack of judgment and proper discernment are on the part of an operator for a nervous patient's strength only commensurate with a blacksmith nailing the shoes upon the hoofs of a horse. In many cases these patients are suffering under an extreme nervous tension from the moment they are seated in the chair until the sitting is finished. Nay, more than that, the dread which has been constantly in their minds from the time the appointment was made until its fulfillment is a veritable nightmare filled with apparitions of dental engines, "dam clamps," hot air syringes, nerve broaches, mallets, etc., so that they commence the sitting in a state of nervous suspense bordering on frenzy. With such patients half an hour or at most an hour is quite a sufficient tax upon their nerve capital, and should not be repeated oftener than once a week at most, unless the case is of unusual urgency, and even then it is of doubtful expediency. In case of a threatened nervous collapse it is better to dismiss your patient even though you have not accomplished much. The next sitting will undoubtedly be more fruitful of results, besides convincing your patient that your interest in their welfare is not altogether measured by dollars and cents. Don't be afraid to exhibit proper sympathy unembellished with gush. Never say in a frigid tone that would "freeze up the pump," or "strike terror to the heart of a grtndstone," "You must expect it to hurt; you can't expect to have teeth filled without pain." You might as well hit them over the head with an Indian war club, and then wonder that they shrink from your touch and manner. Be as gentle in your manner and touch as is consistent with thoroughness and quality of your operation. Do not become imbued with the idea that it is ever necessary io resort to harsh or heroic measures with such patients, either in your mental attitude or in the demands of the operation. You would better fill a tooth with gutta-percha or some material easily inserted than with a mistaken conviction of excellence set a bur tearing into sensitive tissues (for the sake of undercuts for a gold plug) that thrills and throbs through the whole nervous economy like an electric shock. While it is true that gold is the best material with which to fill teeth, there may be circumstances where its introduction could only be accomplished with dire results to your patient's nervous economy. The permanence of the operation is not so important as the conservation of your patient's nervous strength. The necessity for inflicting pain must not be measured by the seeming ability to bear it. A shock given the nerve centers may produce results more inimical to the health of your patient than the presence of a dozen carious teeth.

While I am not prepared to indorse hypnotism in the broadest acceptance of the term, I nevertheless believe that much may be done to alleviate the fear of the nervous patient by directing his mind into channels entirely remote from the one which fill his whole being with a nameless terror, viz., the dread of the operation. If this should necessitate some outlay of mental effort upon your part, surely the end ought to justify the means. It is hardly necessary to direct your attention to the matter of externals in the way of appointment. That, of course, will be one of your fundamental requisites. An object may be of such a character as to catch the eye, and through that influence direct the thought away from unpleasant association, thus, in a measure at least, neutralizing the emotion caused by fear of pain. A picture suggestive of the beauties of nature—singing birds and blooming flowers—would be somewhat more appropriate than, for example, Pocahontas saving the life of Captain John Smith, or some equally pleasant theme.

The use of tonic, stimulants or sedatives in certain nervous conditions is not only permissible but actually desirable, especially when it is necessary to carry the patient through an ordeal of pain such as the excavation of a hyper-sensitive tooth. Of course, their use should always be accompanied with intelligent and proper discrimination. It is well in some cases to prepare the patient for the sitting by the use of tonics administered in advance. There are many which will prove effectual in such cases; it is not necessary to specify any particular one, and as all operations in the oral cavity are in more or less degree surgical, it will be found desirable to emyloy opiates or anesthetics when circumstances seem to indicate their use.

My own experience leads me to believe that inhalation is attended with less evil effects than using the stomach as a vehicle to carry the drug into the circulation, as this method will prove a greater tax upon the system, while the effects will be of longer duration than is necessary. While many operators use morphine, Jamaica dogwood and other agents, my experience has been more satisfactory with chloroform, ether or nitrous oxide gas. Their use should be attended with great care, and only small quantities administered, especially chloroform, with which the results can often be attained by a few drops quickly inhaled, rendering the excavation of very sensitive dentine comparatively painless. In the use of all these agents, kind, quality and quantity must be regulated by the knowledge and juagment of the operator. Plenty of fresh, pure air, with abundance of sunshine, will go far towards dispelling fears and banishing the hobgoblins of dread in our nervous patients.

It would be difficult to outline a specific formula for all cases; there will be found peculiar phases of temperament in each case which claims our service. Consideration coupled with tact and skill will enable us to smooth many of the rough places in the path of this class of patients.—*Pacific Medico-Dental Gazette.*

ARTICLE VI.

PROFESSIONAL DEMEANOR.

R. B. GENTLE.

In writing on this time-honored subject, it is not my purpose to dwell at any length on the ordinary and natural requirements of a practitioner, but rather to bring to your notice a few points, which may not have had your especial attention.

There are conditions which arise in the practice of our profession which, if met as their peculiarity demands, will as a rule terminate to the advantage of the practitioner; while, on the other hand, if the practitioner is not equal to the occasion, the opportunity is lost, and notwithstanding the fact that he will probably pass the matter with the consideration that as nothing was at stake, nothing was lost, he has very likely lost something that would have been of great value.

"There is a tide in the affairs of men
Which taken at the flood leads on to fortune;
Omitted, all the voyages of their life
Is bound in shallows and in miseries."

If that were true in the time of Shakespeare it is no less true at the present time, and there are countless numbers of opportunities that pass by and we think lightly of them, until we see them grow into things of beauty and grandeur.

To take advantage of these opportunities as they come before us from time to time requires tact, refinement, experience and ability.

To be able to conduct one's self in such a calm, gentlemanly, yet stern manner, that an old maid having contempt for all men, after venting all her spleen on him by words and acts recognizes that she is not only unable to ruffle his temper, but is lowering herself in his estimation—or to be able to meet, with unflinching eye, the "know-all," who would kill you with a look, or the bluffer who would have you understand that you must do according to his dictations; I say to be able to do these things requires diplomacy or tact.

Refinement is a prerequisite to all in the upper walks of life, a thing easily acquired if the environments are conducive thereto, and in this age of advancement and competition, what profession or occupation requires refinement more than that of practicing dentistry? Personal appearance and cleanliness have much to do with the impressions made by different people when circumstances bring them in contact one with another.

Whether or not they realize it, nearly all people are impressionists, and it is the first impression formed that nearly always stands, whether it be right or wrong, as that intimacy necessary to the uprooting of a wrong impression is seldom allowed us—especially in this transient West.

We have heard it said that "The apparel oft proclaims the man," and while we do not sanction foppery, or extravagance, yet it is better to be a liitle over-dressed than sadly negligent in that regard. Lord Chesterfield in his plain English speaking way says, "One who is careless about his person at twenty will be a sloven at forty and filthy at fifty." I fear that we have in our ranks some who were careless at twenty. It is an easy matter for an operator to step back from the chair and fill his lungs with good, wholesome air, but not so with patients, and it is with reluctance that they will submit to a second seance where a foulness pervades the air.

The elevated position of our profession is maintained by the members individually.

That gentlemanly demeanor is just as essential in the office as it is in the parlor, and it is as easy to treat the less fortunate with courtesy as otherwise.

Should the laborer, dressed in his homespun, call to consult you regarding some work and the probable cost thereof, be gentlemanly and plain with him, as he may not be familiar with the technical terms used by you every day, and should you do his work, let there be no better done, because you are receiving hard-earned dollars from a representative of labor, the backbone and salt of the earth. He may leave your office thinking that your prices are exorbitant, but he cannot but think you are a gentleman. On the other hand, if his work is not the kind that you desire, recommend him to another dentist in a manner that his feelings may not be hurt. Some of these people are very sensitive and as we by our own choice have become servants of the people, we should at least treat them with common courtesy.

To know how and when to act on most occasions not only requires the power of reading human nature, but the practical experience of dealing with people from our professional side of the fence, and while I have spoken of maintaining our professional dignity, yet there are times when we are called upon to assert our rights and resent abuse. There does exist a class of people who cannot be handled with gloves, and as we cannot always get rid of them, they should be handled as their case demands. It was once my displeasure to see a man who sat down in a chair to have a tooth extracted, who told the dentist that if he broke his tooth he would knock him down. He was immediately dismissed. That was the only tooth I ever wanted to extract.

Directly in reverse of this class of patients we have the little folks to deal with, and if they have been lied to at home they will expect you to lie to them, and you have to go through the ordeal of restoring confidence in them, which can only be done by patience and honesty. If you can't devote to them the necessary time, give some less busy dentist a chance, and don't by your gruffness and impatience impress them with a feeling of horror for the dental office at a period of life when they need so much the care and advice of the dentist. The dentist who carries his frowns continually at the chair has no business with the little ones, to whom the first sitting means so much.

The ability to preserve that gentlemanly demeanor at all times depends largely on the state of one's health. It only takes about eight months' work at the chair to exhaust all the smiles that one is able to muster up. Then it is time to attend the meeting of some dental society and find out that life is really worth living. In this Western country where nature has endowed us with so many beautiful, lakes, rivers and mountains, to which we can go for recreation, there is little excuse for us having faces pinched and care-worn from confinement.

It is not conducive to mental peace to have too many irons in the fire at one time. No one man can do and be every thing.

> "The man who seeks one thing in life and but one
> May hope to achieve it before life be done,
> But he who seeks all things wherever he goes
> Only reaps from the hopes which around him he sows
> A harvest of barren regrets."

We can't climb to any height on two ladders which point to different stars. There is no middle round in the ladder on which we can stop, if we wish to keep abreast with the profession. And as we advance along the line of new thought, let our demeanor be such that we may rank second to none in the eyes of the social and professional world.—"Pacific Medico-Dental Journal.

Communicated.

WHY SHOULD NEW JERSEY COMPEL DENTISTS TO REGISTER ANNUALLY.—This is a question of some importance to the dental profession of New Jersey, and in view of the fact that this State is of no account financially to that profession, and it is not recognized in any of the public institutions, and is stringent and unjust in its legislation, we assume the ground, that in the light of the above facts, that this State has no right whatever for such tyrannical, unjust and unconstitutional enactments.

In the entire state of New Jersey some half dozen men, known as the New Jersey State Board of Registration and Examination in Dentistry, are recognized by the law. It is a question if the gentlemen constituting the board receive a single cent from the State Treasury.

If the dental profession was recognized in all the state and public institutions, this State to a certain extent should look after its members, but as a matter of absolute fact, the dental profession is ignored.

How different it is with the medical profession. The State has its Board of Health, etc. Every city, country, township and even small towns have their public physicians, paid out of the public treasury for their services. A physician living less than six miles from the writer's office, has been paid in less than fifteen years, more than three thousand dollars for services rendered the poor and indignent in his township.

The writer has performed dental operations for the poor for upwards of a quarter of a century, and never received a single dollar for his services, either from the poor, "the State's wards," or from the state, township or county. Hence I dispute the right of New Jersey to hold the reins over the dental prefession. It is unjust, cruel, disgraceful. tyrannical, degrading and fraudulent.

Right here we would say, that if the profession of dentistry in New Jersery had stood by us in our opposition to the these laws, they would never have been enacted. Almost unaided the writer had a proposed dental law "strangled" in committee of the Senate, but it passed the succeding year because of no opposition.

United States legislation and Josiah Bacon, representing the Goodyear Dental Vulcanite Company, had everything their own way, and acts often vile, cowardly and sometimes serreptious, will meet with a well deserved fate in some of the American States, if American manhood is not dead.

There are too many laws in America, many of them conflicting. Americans are governed too much. The governing of mankind is at best a necessary evil. "That country is governed best, that is governed least." The very stringency of some laws betray their weakness and defeat their object.

DR. EDWARD H. BOWNE,
Kingston, N. J., April, 1899.

COLORADO STATE DENTAL ASSOCIATION.

At the thirteenth Annual Meeting of the Colorada State Dental Association, held in Denver, June 13th, 14th and 15th, 1899, the following officers were elected:

President, A. C. Watson, Denver; 1st Vice-President, J. N. Chipley, Pueblo; 2nd Vice-President. Mary A. Bradner, Denver; Cor. Secretary, Florence S. Green, Denver; Record. Secretary, L. S. Gilbert, Denver; Treasnrer, William Smedley, Denver.

FLORENCE S. GREEN, Cor. Sec'y.
207 Mack Block, Denver.

Editorial, Etc.

A DECISION WHICH MAY COST DENTISTS MILLIONS. —CROWN AND BRIDGE PATENTS.—COURT HOLDS THAT INTERNATIONAL COMPANY IS ENTITLED TO ROYALTY ON SUCH OPERATIONS.—Some difference of opinion seems to prevail among the dentists of Baltimore in regard to the final results of the decision rendered in New York last Monday by Judge Townsend, of the United States Circuit Court, in favor of the International Crown Tooth Company against James Orr Kyle, a New York dentist. The decision confirms the validity of the patents held by the International Crown Tooth Company, of which Dr. L. T. Sheffield is president, on all operations known as "tooth crowns" and "bridge work." While it is technically against a single individual, it affects almost all of the dentists in the United States.

Litigation extending over 17 years and affecting claims which are estimated at present at $10,000,000 led up to the decision of Judge Townsend. The strongest kind of a fight has been made during the entire period by the complainant company on the one side and by the Dental Protective Association, which includes practically the whole of the dental fraternity of the country, on the other.

ORIGIN OF THE SYSTEM.

The father of the system of applying tooth crowns was Dr. James Low, a dentist, who performed his first operation in 1877. In 1881 he took out certain patents on the process. At about the same time Dr. Sheffield devoted himself to the problem of the insertion of artificial between sound teeth by what is known as "bridge-work." To perfect the system, Dr. Sheffield purchased from Dr. Low the patents covering his original device, in this way acquiring control over the whole system of operations.

In a short time Dr. Sheffield's establishment became a training school for dentists from different parts of the country who desired to become proficient in the new art, and the system was gradually adopted throughout the country.

At this stage of affairs, to prevent use of the patent without payment of the royalty, it is stated that the patentee sold his right to a syndicate. A stock company was formed, with stock capitalized at $1,000,000. And then the fight began. The company demanded the payment from all who did "crown" and "bridge" work of an annual license of $25 and 15 per cent. of the cost of all operations, fixing also the minimum price for crowning a tooth at $10, but requesting that the usual price be $15.

BALTIMORE DENTISTS SUED.

Agents of the Sheffield Company were sent out all over the country to prevent any infringement of the patent. During the winter of 1886-87 an agent of the company discovered that Dr. R. B. Winder, who has died since then, and Drs. T. S. Waters, R. B. Roach, A. P. Gore and Marshall Smith, the first dentists in Baltimore to make use of the system of tooth-crowning, performed the operation. They were promptly sued by the company. The suit was not pressed, but the company demanded that the dentists pay the annual license fee and the 15 per cent. on the cost of all operations. They refused to do this, and in a short time joined the Dental Protective Association, which had been organized a short time before by Dr. J. N. Crouse, of Chicago, for the purpose of fighting the company. The Baltimore dentists were not again troubled by the corporation.

Several cases came up and were successfully contested by the Dental Protective Association, the greater part of the dental fraternity throughout the country having joined that association and given it the necessary financial backing.

QUESTION REOPENED..

Some of the first suits won by the Dental Protective Association were won on the ground that Dr. Sheffield's patents had been anticipated by a Dr. Beardslee. The whole question was reopened in 1898, when the suit was brought against James Orr Kyle. This suit was also defended by the Dental Protective Association, but was lost.

As the patent was taken out in 1881, it expired in 1898. Although the patent expired during the litigation, the decision confirms the right of the complainant company to collect royalties on all infringements covering the whole existence of the patents. Dr. Sheffield claims that tha amount due the tooth crown company on royalties is not less than $10,000,000. Injunction is refused, but the Doctor is given the right to call for an accounting, and it is understood that he will begin at once to collect what he can get out of those whose claims he can establish.

AN OPPORTUNE TIME.

A Baltimore dentist said yesterday that probably two-thirds of all the dentists in the city now perform the operations of tooth-crowning and bridge-work, and if their claims could be established, it would mean thousands of dollars in the treasury of the Sheffield company. "I attribute the loss of the last case," he said, "to the failure of the dentists throughout the country to support Dr. Crouse.

"However," he continued, "the decision is more opportune at present than it would be at any other time. The National Dental Association is in session now at Niagara Falls. Dr. Crouse is chairman of the executive committee of that body, and if concerted action is to be taken by the dentists throughout the country, the initial steps will probably be taken by the convention."

As an instance of the effective silencing power of the Dental Protective Association, another dentist referred to his experience a little over 10 years ago while practicing in a Western city. He was sued by the tooth crown company for performing the operation of tooth crowning and bridging without paying the prescribed royalty. Not feeling strong enough as a single individual to fight the corporation, he paid the amount of $200, said to be due the corporation, and took out the license. A short time afterward he joined the Dental Protective Association and dropped all connection with the tooth crown company, never removing the first license, but continuing to "crown" and "bridge" teeth. From the date of his enrollment in the protective association all prosecution by the tooth crown company ceased.

AN APPEAL LIKELY.

Another dentist, who has a large practice in both crown and bridge operations, was inclined to view the matter lightly. He said that he thought without a doubt the case would be carried to a higher court. Until the appeal was made and the decision declared, he said that he refused to despair over it.

"Ethically," he said, "no dentist has any right to patent any contrivance used in his profession. A medical man who would patent a method of a formula would be ignored by all of the best men in the profession. Besides this ethical side of the case, there is the more practical side. The operation of crowning or bridging as carried on to-day is different from the original operation. It has been extended, modified and improved by individual practitioners.

"The trouble with the Dental Protective Association in this last case has been that Dr. Crouse has lost caste by opening a manufacturing association, and some dentists have mistrusted him on that account, and have failed to give the financial support to the protective association that it deserves. Those of us who are acquainted with Dr. Crouse know how time and time again he has neglected his own practice in the interests of the association.

All of the dentists agree that should the present decision be sustained by higher courts it would be extremely difficult to ascertain the indebtedness of any dentist to the corporation. Dentists are not noted for their superior quality of their bookkeeping. Some keep their accounts on slips, which are destroyed on payment of the bills. Some keep their books in cipher, others follow the regular system. Only a few are likely to have the books containing the record for many years back.

In addition to the difficulty in getting at the dentists' records, the dentists claim that to prove the cases the patients would be obliged to go into court to testify that work was done by such a man, in such a place and at such a time, and this they would be unwilling to do.

METHOD OF COLLECTION.

A prominent lawyer of Baltimore, well acquainted with the procedure in cases of patent infringement, said that the course usually pursued to collect royalties from persons who have used a patented article or method is to send each person a printed circular in which the decision of the courts sustaining the patent right is quoted and asking for an accounting. As a rule, he said, this is sufficient to cause the person who receives the circular to make up an account and settle with the proper persons. This, he added, is likely to be the method pursued by the owners of the patent for "crown" and "bridge" work.

Each dentist in the country will receive a circular and the action of each individual dentist will govern the subsequent proceedings in his case. If he submits a satisfactory statement, together with the sum of money that is due the owner of the patent right, no further proceedings will be taken, but if he refuses to submit a statement, or if his statement is not satisfactory, the owner of the patent right may bring suit against him and require him under oath to make a statement of the amount and value of "crown" and "bridge" work done by him during the life of the patent right.

As a general thing, continued the lawyer, persons who have used a patent right will comply with the demands of its owners and save the heavy court costs.

WILL FIGHT THE DECISION.—DENTISTS TO OPPOSE THE INTERNATIONAL TOOTH CROWN COMPANY.—Dr. J. N. Crouse, president of the Dental Protective Association, which is in session at Niagara Falls, N. Y., said that a meeting would be held Friday morning to take action upon the decision rendered in New York by Judge Townsend in favor of the International Tooth Crown Company, as against Dr. James Orr Kyle, a dentist.

The decision sustains the validity of the company's patents on all operations known as "tooth crowns" and "bridge work," and allows the company to collect royalties on all infringements. It is said that claims conservatively estimated at $10,000,000 are affected.

Dr. Crouse says that hundreds of dentists will join the Protective Association, and that the decision will be fought.

Monthly Summary.

EXPERIMENTS WITH NIRVANIN.—In the last publication of the "*Wochenschrift*" my colleague Rotenberger called the attention of the dental fraternity to a new preparation, *Nirvanin*. As I have had some experience with the article, I take the liberty to give my opinion of the same as far as my experiments will warrant. Trials were made partly in collaboration with a practicing physician, Dr. Krueger, and partly alone. We selected the most difficult cases from among the material that came under our care. A number of extractions were made from persons of varying ages after the use of *Nirvanin* with invariably satisfactory results. In two or three per cent. of the cases absolute anesthesia was not attained, but a considerable degree of insensibility resulted from the use of *Nirvanin*. This may have been as much our fault as otherwise, resulting from too quickly applying the forceps. We brushed the gums with a *five per cent. solution* of Nirvanin, or applied tampons saturated, to the gums, which produced the dual effect of anesthesia and antisepsis. According to Professor Einhorn and Dr. Heinz, a one per cent. solution of Nirvanin is sufficient to perfectly prevent the growth of bacteria. The gums were also injected to the periosteum on both sides, the finger gently pressed on the point of injection to prevent an overflow of the liquid and to divide the injected fluid. I discourage the use of old solutions, preferring to make my solution at the time I wish to use it. For convenience sake I have had tablets of Nirvanin made, each containing 0.25 gm., of which I dissolve one or two in 10 c. cm., of water for immediate use. About two or three minutes after this treatment forceps may be applied. No alarming or dangerous symptoms or after-effects appeared or were ever noticed, and no difficulties of any kind resulted except in a case of one patient who had a painless edema during one day. No pain is felt after the operation, and the process of healing is always normal. In all the cases the pulse was good. In several instances we used a ten per cent. solution of Nirvanin to reduce the sensibility of the dentine with most gratifying results. After inserting a tampon saturated with a 10 per cent. solution we could proceed with work in the excavations after a lapse of only two or three minutes. I advise adding 5 per cent. of Nirvanin to temporary fillings, and as a caustic paste that is painless and at the same time anesthetic, I recommend the following:

Acid Arsenicos.	1.0
Nirvanin.	1 0

Lanoline q. s., to make a paste.

I have used Nirvanin in several cases of pulpa-cupping, amputations and root fillings, but prefer to reserve reports on these cases until later.

Nirvanin, in conclusion, has proven itself in my hands a most effective and lasting anesthetic in the treatment of painful conditions of the mucous membrane of the mouth. After experience with Nirvanin I heartily endorse its use, and wish that others of our profession may make use of it, and report results. Only thus will it be possible to arrive at a correct judgment as to its real efficacy.—Robert Marcus, Dentist, in *Deutsche Zahnaerztichen Wochenschrift No. 39.*

TREATMENT OF CARBOLIC ACID POISONING.—Harnsberger (*Charlotte Med. Jour.*, February, 1890), saw a boy, aged 16 years, within thirty minutes of the time that he had swallowed 1.5 ounces of carbolic acid. He was in a limp and comatose state, the pulse being imperceptible. A pint of cream was at once poured into the stomach, which was kneaded in order to mix thoroughly the cream and the carbolic acid. Dry heat and friction were applied to the legs and arms. In two or three hours consciouness returned. The administration of cream and unskimmed milk was continued at short intervals for several hours. The patient entirely recovered in two days. Harnsberger has found that an adult can take four drams of pure carbolic acid mixed with cream and glycerine, or with alcohol, without any toxic symptoms developing.—*Med. News.*

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, SEPTEMBER, 1899. No. 5.

Selections.

ARTICLE I.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The sixteenth annual session of the National Association of Dental Faculties was held in Niagara Falls, commencing Friday, July 28, 1899.

The following colleges were represented, as noted :

Birmingham Dental College, Birmingham, Ala.—T. M. Allen.

University of California, Dental Department, San Francisco, Cal.—A. A. d'Ancona.

Colorado College of Dental Surgery, Denver, Col.—J. S. Jackson.

University of Denver, Dental Department, Denver, Col.—A. H. Sawins.

Columbian University, Dental Department, Washington, D. C.—J. R. Hagan.

Howard University, Dental Department, Washington, D. C.—A. J. Brown.

National University, Dental Department, Washington, D. C.—A. D. Cobey.

Atlanta Dental College, Atlanta, Ga.—H. R. Jewett.

Dental Department of Atlanta College of Physicians and Surgeons, Atlanta, Ga.—Frank Holland, S. W. Foster.

Chicago College of Dental Surgery, Chicago, Ill.—Truman W. Brophy.

Northwestern University Dental School, Chicago, Ill.—Theo. Menges.

Indiana Dental College, Indianapolis, Ind.—George E. Hunt.

State University of Iowa, Dental Department, Iowa City, Ia.—W. S. Hosford.

Louisville College of Dentistry, Louisville, Ky.—H. B. Tileston,

Baltimore College of Dental Surgery, Baltimore, Md. M. Whilldin Foster.

University of Maryland, Dental Department, Baltimore, Md.—John C. Uhler.

Boston Dental College (Taft College Dental School), Boston, Mass.—Chas. P. Thayer.

Harvard University, Dental Department, Boston, Mass.—Thomas Fillebrown.

College of Dental Surgery of the University of Michigan, Ann Arbor. Mich.—J. Taft, N. S. Hoff.

Detroit College of Medicine, Dental Department, Detroit, Mich.—G. S. Shattuck.

University of Minnesota, Dental Department, Minneapolis, Minn.—W. P. Dickinson.

Kansas City Dental College, Kansas City, Mo.—J. D. Patterson.

Western Dental College, Kansas City, Mo.—D. J. McMillen.

Marion-Sims College of Medicine, Dental Department, St. Louis, Mo.—J. H. Kennerly.

Missouri Dental College, St. Louis, Mo.—A. H. Fuller.

University of Omaha, Dental Department, Omaha, Neb.—A. O. Hunt.

University of Buffalo, Dental Department, Buffalo, N. Y.—William C. Barrett, R. H. Hofheinz.

New York College of Dentistry, New York City.—Faneuil D. Weisse.

New York Dental School, New York City.—John I. Hart, Roderick M. Sanger.

Cincinnati College of Dental Surgery, Cincinnati, O.—G. S. Junkerman, W. T. McLean.

Ohio College of Dental Surgery, Cincinnati, O.—H. A. Smith.

Western Reserve University, Dental Department.—Cleveland, O.—H. L. Ambler.

Ohio Medical University, Dental Department, Columbus, O.—Otto Arnold.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.—Wilbur F. Litch.

Philadelphia Dental College, Philadelphia, Pa.—S. H. Guilford.

University of Pennsylvania, Dental Department, Philadelphia, Pa.—James Truman, Edward C. Kirk.

Pittsburg Dental College, Pittsburg, Pa.—Walter H. Fundenburg.

School of Dentistry, Central Tennessee College, Nashville, Tenn.—G. W. Hubbard.

University of Tennessee, Dental Department, Nashville, Tenn.—L. G. Noel.

Vanderbilt University, Dental Department, Nashville, Tenn.—Henry W. Morgan.

Tacoma College of Dental Surgery (North Pacific Dental College), Portland, Ore.—Geo. H. Chance.

Milwaukee Medical College, Dental Department, Milwaukee, Wis.—Geo. V. I. Brown.

Royal College of Dental Surgeons of Ontaria, Toronto, Canada.—J. B. Willmott.

The treasurer reported that the Dental Department of Tennessee Medical College, of Knoxville, Tenn., was no longer in existence, having been absorbed by another school.

The Tacoma College of Dental Surgery, having removed to Portland, Ore., was given authority to change its name to North Pacific Dental College.

The trustees of Boston Dental College accredited Dr. C. P. Thayer as delegate to explain to the association that they had transferred the institution, with all its appurtenances, to Tufts College, and to request that the Tufts College Dental School be permitted to make application for membership at this meeting. On motion it was ordered that Tufts College Dental School be accepted as a continuance of the old college, and that the change of name be approved.

The applications for membership of the following schools, having been reported as regular by the Executive Committee, lie over for one year for final action.

Medico Chirurgical College of Philadelphia, Dental Department, Philadelphia, Pa.

Central College of Dentistry, Indianapolis, Ind.

College of Dentistry, University of Southern California, Los Angeles, Cal.

Illinois School of Dentistry, Chicago, Ill.

Washington Dental College and Hospital of Oral Surgery, Washington, D. C.

Keokuk Medical College, Dental Department; Keokuk, Ia.

The Committee on Text-Books reported recommending that the following be adopted: "Anatomy and Histology of the Mouth and Teeth," by I N. Broomell, D. D. S.; "The Practice of Dental Medicine," by Geo. F. Eames, M. D., D. D. S; "Comparative Dental Anatomy," by A. H. Thompson, D. D. S. (recommended last year in proof); "Methods of Filling Teeth," second edition, by R. Ottolengui, M. D. S.

The committee had also examined "Chemistry and Metallurgy Applied to Dentistry," by Vernon J. Hall, Ph. D.; and while admirable, and containing many excellent features, the committee believed it unwise to recommend it as a text-book, inasmuch as there are already two excellent works on the same subject on the list.

Of "Interstitial Gingivitis, or so called Pyorrhea Alveolaris," by Eugene S. Talbot, M. D., D. D. S., the committee reported that it contained evidence of laudable and extensive research, but the subject is still a matter of so much controversy and diversity of opinion as to make undesirable a text-book upon it at the present time.

The committee also suggested the removal of Clifford's Manual of Recitations," adopted in 1892, and Burchard's "Compend of Pathology," adopted in 1897.

The following resolutions, laid over under the rules from 1898, were adopted :

Offered by Dr. Allen :

RESOLVED, That it is the sense of this association that the present method of bestowing scholarships is no longer called for, and is detrimental to the best interests of the profession, and that hereafter no college of this association shall grant either free or beneficiary scholarships not absolutely made obligatory in their charter.

Offered by Dr. Barrett :

RESOLVED, That it shall be the duty of the secretary of this association to present at the opening of each annual session a list of the colleges, members of this association, who have been unrepresented for two years, that proper action may be properly taken.

The resolutions of Drs. Allen and d'Ancona concerning the attendance of students were substituted by the following, offered by Dr. Willmott, which was adopted :

RESOLVED, That students in attendance at colleges of this association, to obtain credit for a full term, must be and remain in attendance until the close of the session.

In accordance with this action, Rule 4 was amended to read as follows :

4. In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient cause abandons his studies for a time, he may re-enter his college at the same or a subsequent session, or where, under similar circumstances, he may desire to enter another college, then with the consent of both deans he may be transferred.

Rule 9 was amended to read as follows:

ADMISSION OF UNDERGRADUATES OF MEDICINE.

9. Undergraduates of reputable medical colleges who have regularly completed one full scholastic year of a six months' term and passed a satisfactory examination in the studies of the freshman year may be admitted to the junior grade in colleges of this association, subject to other rules governing admission to that grade.

The Committee on Conference with the National Association of Dental Examiners reported, as the result of several conferences held with a similar committee from the Examiners' Association, that an agreement had been reached concerning the matters which had been in controversy between the two associations for several years. The report was adopted. [The basis of the agreement, with some account of the difficulties referred to, will be found at the end of this report].

The following resolution was unanimosly adopted:

RESOLVED, That the thanks of the National Association of Dental Faculties are due to the Chicago College of Dental Surgery for the courage and persistence with which it has maintained what we believe to be a correct principle, and that we regard the placing as unrecognized and disreputable in the newspapers and otherwise of one of the oldest and best of our professional teaching institutions an injustice that demands complete rectification.

Dr. Barrett offered the following, which were adopted:

RESOLVED, That the commonly accepted Code of Ethics regulating the conduct of practitioners in their relations with other practitioners be approved and made obligatory upon the dental colleges of this association in their relations with other colleges.

RESOLVED, That the section of the Code which refers to public advertisements be interpreted to forbid the advertising of the infirmaries of dental colleges in any manner that might be construed to be unprofessional if done by a practitioner.

RESOLVED, That as dental colleges should in every practicable, manner impress the importance of ethical conduct upon their students, and should themselves set a good example in this particular, their public advertisements should be confined to a simple statement of the location of the schools, the date of opening and closing, with any other really essential facts, all details being reserved for the annual announcement, which itself shall not violate the usually accepted ethical tone.

Dr. Taft offered the following:

RESOLVED, that a Commission consisting of three persons be appointed, whose duty it shall be to take cognizance of, investigate, and advise with any parties contemplating the establishment of a new college or the reorganization of an old one.

In the performance of the duties of this commission it shall be competent to take into consideration the following points, viz:

The consideration of any proposed new dental college; taking into account all the circumstances that attach to it; the motive that prompts such an organization; the need for it; the proposed locality; the character and ability of those who propose to conduct it; the sufficiency of the resources that may be available for its establishment, and whether, on the part of the promoters, there is a just appreciation of that which is required for such an institution.

The attainment of full knowledge on these points would enable the Commission to advise wisely.

It would be the duty of this Commission to report to this body at each annual meeting.

The resolution was adopted, and it was ordered that the commission be elected with the other officers.

The following amendment to the constitution was adopted:

Change Article V to read as follows:

Article V. The Executive Committee shall consist of five members, three of whom shall be elected annually; the two receiving the higher number of votes shall hold office for two years each. The Executive Committee shall have power to designate the time and place of meeting, make preparations for same, and transact such other business as usually devolves upon such committee. That five members be elected this session, the two receiving the highest number of votes to serve for two years, the other three for one year each.

On motion of the Executive Committee, it was ordered that colleges making application for membership in this body shall have present a copy of their annual announcement, and that a duly authenticated representative of the school be present at the meeting; without which the application shall not be considered.

It was decided that the change from six to seven months' terms, which goes into effect with the session of 1899 1900, should apply to all students in colleges of the association, even though the students may have previously attended under the six months rule.

On motion of Dr. Barrett, it was ordered that a Committee on Law, to consist of three members, be elected to serve as a standing committee, which shall be authorized to levy such assessments upon the members of the association as may be necessary for the payment of past legal expenses and such as may accrue in the future in the suppression of the issue of fraudulent diplomas. Such assessments to be lodged with the treasurer, and paid upon the order of the Committee on Law. It was also ordered that all legal matters which may arise in connection with the National Association of Dental Faculties shall be referred to this committee.

The Committee on Foreign Relations, in concluding the report of its work for the year, offered the following resolutions, which were adopted:

RESOLVED, That the Foreign Relations Committee be instructed to take any steps which they may deem advisable for the putting an end to the issuing of fraudulent and irregular degrees, and to this end are authorized during the coming year to use any funds in the treasury of the association upon the approval of the Law Committee.

RESOLVED, That the European Advisory Board of the Foreign Relations Committee be and is hereby invited each year to send a delegation to attend the annual meeting of this association, and that such delegation be accorded seats in the meetings of the association, with all the privileges of debate.

RESOLVED, That no student coming from Europe shall be received by any member of the association until his credentials shall have been approved by the members of the European Advisory Board for the country from which he claims to come.

RESOLVED, That the Committee on Foreign Relations be authorized to appoint Advisory Boards for countries outside of Europe, whenever in their judgment it is advisable to do so, and report any such action at the next succeeding meeting of this association.

RESOLVED, That the Foreign Relations Committee be given jurisdiction in all foreign American dental educational matters, subject always to the approval of the National Association of Dental Faculties, to which a full written report shall be submitted annually.

Following are the members of the European Advisory Board, so far as appointed:

Great Britain.—Wm. Mitchell, W. E. Royce and B. J. Bonnell.

Holland and Belgium.—J. E. Grevers, Ed. Rosenthal and C. van de Hoeven.

Denmark, Norway and Sweden.—Elof Forberg.

Germany.—W. D. Miller, C. F. W. Bodecker and — Hesse.

Italy and Greece.—Albert T. Webb, Tullio Avanzi and A. V. Elliott.

France.—J. H. Spaulding, I. B. Davenport and G. A. Roussel.

Spain and Portugal.— — Purtuondo, Florestan Aguilar and — Thomas.

Switzerland and Turkey.—L. C. Bryan, Theo. Frick and Paul Guye.

Japan, China, and Corea.—Louis Ottofy.

Australia and New Zealand.—Alfred Burne.

The following resolution, offered last year, was again laid over for another year:

Offered by Dr. Hosford:

RESOLVED, That a four years' course in a reputable college leading to the degree of A. B., Ph. B., or B. S., or four years of biological work, be accepted as one year's credit in the colleges of this association subject to other rules governing admission to second year grade.

RESOLVED, That students matriculated in both a collegiate and dental department of a university, having completed the work of the first year in dentistry during the four year collegiate course, may, on graduation with collegiate degree, be given full credit for one year in colleges of this association.

The following, offered by Dr. Foster, was referred to the Executive Committee, to be reported upon next year:

RESOLVED, That when a student fails in any part of the requirements for obtaining his final degree, such student must hold over till the next regular course, during which time he may re-enter and remove such conditions by completing his work and can only apply for his degree at the close of term as announced in the catalogue of such school.

The following resolutions lie over under the rules till next year:

Offered by Dr. Barrett:

To change Rule 1 to read as follows:

PRELIMINARY EXAMINATIONS.

1. The following preliminary examination shall be required of students seeking admission to colleges of this association.

a. The minimum preliminary educational requirement of colleges of this association, after the session of 1901-1902, shall be a certificate of entrance into the third year of a high school, or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

b. Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

Offered by Dr. Weisse:

RESOLVED, That Rules 8, 9 and 10, of the Code of Rules be rescinded, and the following be substituted therefor:

That advanced standing to the junior or senior class of institutions of this association shall only be upon certificate of one or two sessions' attendance, respectively, in an institution belonging to this association.

Offered by Dr. Truman:

RESOLVED, That members of this association violating the rules of this body shall, upon conviction, be fined not less than one hundred dollars for each offense, or be subject to censure, suspension, or expulsion, at the pleasure of the association.

Offered by Dr. Barrett:

RESOLVED, That the Executive Committee be instructed that, except under what they shall decide to be unusual or extraordinary circumstances, and which in their report they shall detail to the association, they shall not report favorably any application for the admission of a new college in the following instances:

1. When there has not been actually secured and bought or leased for a term of not less than three years, and fitted up with all required equipments, a sufficiently commodious and convenient building, entirely adequate to the needs of not less than one hundred students. Such equipment shall include not only the laboratories, infirmaries, etc., with proper chairs, benches, and all apparatus required for complete practical dental instruction, but the rooms and fittings necessary for scientific training, with apparatus and equipments necessary for the proper teaching of

bacteriology, histology, microscopy, chemistry, and such other scientific studies as should form a part of an advanced dental curriculum of study.

2. When the character and attainments of its faculty, which must already have been named, and a list of the members of which with the respective positions they are to occupy shall be embodied in the application presented, are not such as to give assurance that the school will be conducted in a manner to reflect credit upon the dental profession, and to insure complete and adequate instruction in all branches of a broad dental curriculum of study.

3. When the proposed dental college or department is evidently and unmistakably intended primarily for the purpose of sustaining or strengthening another existlng institution with which it is to be allied.

4. When the city or town in which such college is to be located already contains a college, or colleges, for dental teaching, of acknowledged efficacy, liberal character, and ethical standing, sufficient in their opinion for the promotion of the best interests of dentistry and the dental profession.

Offered by Dr. Guilford:

RESOLVED, That while examinations for progress should continue to be held annually upon the subjects taught during the year, no final examinations shall be held until the close of the third year.

Dr. Taft, from the Committee on Curriculum, submitted as the report of his committee the following.

SCHEDULE OF STUDIES.

FIRST YEAR.	Hrs. Per Wk.	SECOND YEAR.	Hrs. Per Wk.	THIRD YEAR.	Hrs. Per Wk.
Anatomy and Dissection	2	Anatomy Regional	1	Therapeutics	1
Physiolgy	2	" Comparative.	1	Pathology.	1
Chemistry, Inorganic.	2	Physiology	2	Surgery, General	1
Chemistry, Laboratory	4	Chemistry, Organic	2	" Oral	1
Dental Anatomy	2	" Laboratory.	4	Jurisprudence	½
Prosthetic Technic	10	Metallurgy, Didactic	1	Orthodontia, Didactic.	1
Histology, Didactic	4	Metallurgy, Laboratory	2	Orthodontia, Practical	1
" Laboratory.	4	Materia Medica	1	Operative Dentistry	2
Materia Medica		Operative Technic	4	Prosthetic Dentistry	2
Comparative Anatomy		Bacteriology, Didactic	4	Electricity	
		Operative Dentistry, Didactic	2	Ethics	
		Orthodontia Technic.	1	History	
		Pathology	2		
		Orthodontia, Didactic.			

INFIRMARY.

Prosthetic Dentistry...	5	Prosthetic Dentistry...	6
Crown and Bridge-Work...	3	Operative Dentistry....	15
		Crown and Bridge-Work...	4

The following were elected officers for the ensuing year: Johathan Taft, president; B. Holly Smith, vice-president; J. H. Kennerly, secretary; Henry W. Morgan, treasurer; S. W. Foster, J. B. Willmott, executive committee for two years; H. B. Tileson, Theo. Menges (chairman), S. H. Guilford, executive committee for one year; W. T. McLean, J. D. Patterson, W. S. Hosford, *ad interim* committee; Truman W. Brophy, Edward C. Kirk, Albert H. Fuller, commission on proposed new colleges; A. O. Hunt, Henry W. Morgan, W. C. Barrett, Committee on law.

The newly-elected president appointed the following committees: T. M. Allen, W. S. Hosford, W. P. Dickinson, G. S. Shattuck, J. G. Templeton, committee on schools; A. J. Brown, John I. Hart, Thomas E. Weeks, Edward C. Kirk, Thoms Fillebrown, committee on text-books; W. C. Barrett, J. D. Patterson, T. W. Brophy, S. H Guilford, H. W. Morgan, committee on foreign relations; N. S. Hoff, G. V. I. Brown, committee to secure papers to be read at the next annual meeting; S. H. Guilford, W. F. Litch, N. S. Hoff, A. H. Fuller, C. L. Goddard, committee on curriculum.

The Executive Committee reported that it had decided to adopt the suggestion of Dr. Willmot to convene the next meeting on the day of the adjournment of the National Dental Association, at the same place.

Adjourned to meet at Old Point Comfort, Friday June 29th, 1900.

An important fact in connection with the meeting of the National Association of Dental Faculties was the presence of three of the members of the European Advisory

Board of the Committee on Foreign Relations: Drs. Lyman C. Bryan, of Basel, Switzerland; John E. Grevers, of Amsterdam, Netherlands, and William Mitchell, of London, England.

Dr. Grevers, in speaking of the reception to advanced standing of students from foreign countries, probably struck the keynote of the entire situation. He was impressed, he said, with the idea that the foreigner comes to this country to study dentistry for one of two reasons: First, as a graduate, or as one having fulfilled the requirements in his own country, who desires to still further develop his manipulative ability by the acquirement of American methods; or, second, because he cannot fulfill the requirements in his own country, and hopes to secure something here which will enable him to return home and practice. So that if the applicant from a European country is not supplied with the proper certificates the colleges should be cautious about receiving him to advanced standing.

The proceedings of the late meeting were varied by two pleasant, albeit unusual, incidents.

The first of these was a trolley ride of the members of the association and their friends to Buffalo, twenty-five miles away, and return, as the guests of the Dental Department of the University of Buffalo. Arrived at Buffalo they were taken to the college building, where an ample collation was served, accompanied by several felicitous speeches. The various departments of the college were then inspected and pronounced good, after which the party again boarded the trolley cars and were taken to view the grounds where the Pan-American Exposition is to be held two years hence. Then came the return to Niagara Falls, which was accomplished without incident and without fatigue, every one expressing his gratification over the outing.

The second was of the same nature, but involved a visit to a foreign land. The Royal College of Dental

Surgeons of Ontario, invited the members of the Faculties Association and also those of the National Association of Dental Examiners to visit the college and view the city of Toronto. In response about seventy-five persons took the train at Niagara Falls for Lewiston, where they boarded the steamer for the journey across Lake Ontario to Toronto. Arrived here a short walk brought them to McConkey's, where a fine collation was served and appropriately disposed of. Tally-hos and carriages then conveyed the party to various points of interests in the city, among others Parliament House, where they alighted and spent a short time admiring its beauty of architecture and internal arrangement and fittings. A short drive brought them to the Royal College of Dental Surgeons of Ontario, where they were assembled in the main lecture room, and and speeches of felicitation and good-will followed; after which the visitors circulated through the building, inspecting the equipment of the college and having explained to them the methods of instruction in various branches. It was the universal opinion that the school was admirably equipped for the systematic instruction of students of dentistry. The entrance to the college was tastefully draped with the flags of Great Britain and the United States. From the college the party proceeded to the Forester's Temple Cafe, where a second collation was served; after which they were driven to the steamboat landing. As the vessel moved off three cheers for the Royal College of Surgeons were given with a will. The return journey was made without mishap, and the excursionists unanimously declared they had had one of the most delightful outings of their lives.

The members of the dental profession will be glad to learn that the differences existing for some years between the National Association of Dental Faculties and the National Association of Dental Examiners have been reconciled. These differences have been the cause of much friction between the two bodies.

The cause of the trouble was the refusal of the colleges to accept various rules which have crystallized into what is known as Rule 8 of the code of rules, Sections 1 and 2, of the Examiners' Association, because the colleges were not consulted in its framing.

The attempted enforcement of this rule recently led to litigation in the state of Wisconsin. The State Board of Dental Examiners of that state refused to admit to registration the diplomas of the Chicago College of Dental Surgery; the Northwestern University Dental School, the Pennsylvania College of Dental Surgery, the Ohio Medical University Dental Department, the Philadelphia Dental College, and others, on the ground that they did not in their preliminary examination come up to the standard established by Rule 8, and demanded that graduates of these institutions presenting diplomas for registration should submit to examination by the board as to their qualifications to practice dentistry.

This contention of the board was resisted by a graduate of the Chicago College of Dental Surgery, who brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the court, with leave to the board to file its answer. The answer was filed, and the case was in that condition at the time of the meeting of the two associations at Niagara Falls on the 28th of July, 1899.

With a view to the adjustment of the difficulty committees of conference were appointed by the two bodies, which, after going over the matters in dispute, agreed on the side of the National Association of Dental Examiners to recommend that Rule 8 be rescinded; that all colleges having membership in the National Association of Dental Faculties be placed upon the list of recognized schools, and that all litigation be withdrawn; and on the side of the National Association of Dental Faculties that a new rule governing the preliminary requirements for admission to the college courses should be adopted.

This action was ratified by the associations. The Examiners' Association adopted a new Rule 8, Sections 1 and 2 of which read as below, the remainder of the rule being substantially as before :

Rule 8, new Sections 1 and 2.

"Section 1. Colleges desiring recommendation to the state boards by the National Association of Dental Examiners shall make application for such recommendations through the Committee on Colleges, on blanks provided for that purpose. This rule to apply only to sohools making application to the National Association of Dental Examiners for recommendation and such schools as may be dropped.

Section 2. The following preliminary examination shall be required of students seeking admission to colleges recommended by this association. The minimum preliminary educational requirements of colleges of this association for the session of 1900-1901 shall be a certificate of entrance into the second year of a high school or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction, as adopted by the State Board of Missouri."

The Faculties' Association adopted the following rule governing the preliminary educational requirements of students :

"The minimum preliminary educational requirement of colleges of this association for the session of 1900-1901 shall be a certificate of entrance into the second year of a high school or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

"Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education."

The cause of friction being removed, the disputes which have arisen, there is every assurance, will be speedily adjusted and the two bodies will thereafter work in harmony.

ARTICLE II.

PRESSURE ANESTHESIA.

DR. WM. J. MORTON.

Mr. President and Gentlemen of the Odontological Society:—I need not say how deeply I appreciate the honor of having the pleasure of being with you this evening and taking part in these discussions, which tend in the end to ameliorate the hard duties of professional life such as both you and I have to meet every day.

Think of the charming goal of which we are in pursuit—to relieve the patient of pain. Then think of the equally agreeable effect upon the operator, to relieve himself of the strain of seeing the patient suffer pain, for I am sure you must feel the pain.

Now there is a humorous side to obtaining any new principle in medicine, just as in anything else. I heard a dentist remark a few minutes ago that since these new things came up, if you will excuse my levity in repeating what he said, it had played "the deuce" with his patients. I suppose he meant he had been experimenting upon them.

Now, my doctrine is something like the doctrine of an acute observer who noticed that when two cats began disputing on his roof, instead of annihilating each other, as he hoped they would, more cats came on the roof. Now that is the effect I would like to see from this new subject. I want to see more cats come on the roof, and I want to hear some other person say that he also has experimented.

I believe that out of all this agitation and thinking there will come in the end some simple, easy means of producing anesthesia of sensitive dentin, which we are now particularly interested in, that will be so easy that you wonder why you have not always done it.

I think we are in what might be called an agitatory stage of the subject. And no matter how old I get, I want to retain that young enthusiasm that wants a try at each new thing, I want to see obtunding, whether by cataphoric anesthesia or any other means, practiced until we are all settled as to which is a best and easiest way.

To-night we are to have, I understand, simply an informal conversation; I yielded to the extremely persuasive powers of one of your members, Dr. Walker, who overcame all my objections, but it was on the understanding that you would do a great deal more of the talking than I. Some of what I shall say is, after all, in a certain respect retrospective, as well as antrospective; if there be such a word. There is a little historical reminiscence back of pressure anesthesia. What, for instance, do we mean by pressure anesthesia? Simply that something exerts a pressure—some obtunding or anesthetizing agency is forced or finds its way into those dentinal tubules and there produces anesthesia. Cataphoresis was pressure anesthesia in an electrical sense, for electricity is pressure, and that is all it is. Cataphoresis, so called, using the positive pole of the battery to exert an electric pressure, was therefore pressure anesthesia. That we will not refer to to-night. Cataphoresis is very much alive. No alternative procedure of so simple a nature can die out of practice, for cataphoresis *will* produce numbness of sensitive dentin, and there will always be cases where you can employ it, but it is also a fact that a simpler method would be desirable. This simpler process we are to-night in search of.

When, four years ago, I stood before the meeting of the First District Society, and we went over the ground of cataphoresis from A to Z, it was a difficult subject because new—difficult to receive and grasp—and, moreover, there are always certain technical difficulties that will stand around cataphoreses, but at this day great advances in the practice have been made.

If, however, possibly there is some simpler method in say twenty per cent. of the cases, we ought to have it in view, and by and by one method will be put against the other until we settle down to some fixed practice.

I wrote a little book on cataphoresis in which I went over the ground fully, and in that book I put one short chapter, just a page and a half, entitled "Pressure Anesthesia." That was an anchor thrown out to the windward about two years ago. Fond as I was of cataphoresis, there still clung in my mind this idea, that simple mechanical pressure, or the pressure of gases and vapors, might finally be used to convey anesthetizing material into the substance of the dentin, and so I put in that chapter.

This idea I had also brought forward at a meeting in the White Mountains in July, 1897, on the subject of pressure anesthesia. The discussion was published in *Items of Interest.*

With your permission, I will read briefly a part of the chapter above referred to.

"*Pressure Local Anesthesia of Soft Tissues and of Dentin.*"—It has become a well-established practice in dental surgery to introduce into the cavity of a tooth for the purpose of bleaching it, when the cavity admits of it, a twenty five or other convenient per cent. of peroxid of hydrogen, held on a pledget of cotton and sealed in. It is maintained that, in addition to the simple process of inhibition, the cocain is forced into the substance of the dentin by pressure due to the evaporation of the ether. In this manner teeth can be successfully bleached to an extent not possible if the pledget of cotton holding the bleaching fluid is not sealed in, except when electricity is used. It occurred to me that if this same principle could be applied to a sulfuric ether solution of cocain that we should possess an extraordinarily simple method of anesthetizing the soft tissues in general and sensitive dentin in particular—a method so simple and sure that it would sweep away all the labor that has been expended in a certain class of cavities, upon the introduction of cocain by electricity. Since cocain hydro-chlorate would not dissolve in sulfuric ether, I dissolved it in guaiacol (making a ten per cent. solution), and then found that I could add equal parts of sulfuric ether to the solution without precipitating the cocain.

"Experiment 1. June 23rd, 1897.—Taking about twenty drops of the above solution, I put it in a small test tube, and inverting the tube, I held its mouth firmly against the skin of my forearm. At the end of five minutes, removing the tube, I tested the area of skin comprised within the circle represented by the mouth of the tube, and found that it was perfectly anesthetized; it remained anesthetic for five minutes, and then gradually recovered sensation without any hyperesthesia to speak of and without injury to the skin. Further experiments substantiated this result.

"I have also made some experiments with air pressure by connecting to a rubber tube, itself in connection with a cylinder of compressed air and a gauge, a hollow needle having a shoulder near its extremity. Where the cavity permits of it, the solution of cocain is introduced upon absorbent material sealed in with plastic material, and then the needle thrust through it as far as the shoulder will permit. At this point the air pressure is allowed to act. By the use of this instrument local anesthesia is promptly obtained. Dr. M. L. Rhein has now an instrument of this description in his possession, and will as soon as possible make further experiments upon dentin and report some cases."

These two publications placed this question of pressure anesthesia fairly before the dental profession two years ago. Since that time I have given very little thought to the matter. I had reports from some of the gentlemen very early. I had a report from Dr. Van Woert, of Brooklyn, who wrote to me he had made several experiments, and perhaps we will hear from him later on where he used these experiments.

Beyond a few more such reports, I hardly knew what had come from that idea, until within the last few months I observe that the profession has become largely interested in pressure anesthesia produced by ethereal solutions of cocain as I had suggested and demonstrated. If on account of its odor it is not desired to use guaiacol as an intermediary to get the otherwise insoluble cocain salt into solution with ether, any other intermediary, such as, for instance, alcohol, may be employed. How the solution is effected is a minor question, once the fact having been established that it could be done and that the solution would act.

What, then, I propose to present for consideration to-night is new to our profession—to make practical applications of *continuous* air pressure for driving any substance through the dentinal tubuli, so that the substance mixes in and through and, being medicinal, like cocain, produces an anesthetizing effect. This same view would be true of pressure if you object that the air would not find its way easily enough through these tubules. Hydrogen will find way; nitrous oxid would find its way under pressure. In fact, you have the whole realm of gases as well as air. But I will confine myself entirely to air, because I have experimented mostly with it.

I am first going to pass around this bulb. You see it is the usual one used for the Pacquelin cautery, for a Davidson syringe; in short, the ordinary one used in dentistry, which you blow up and produce a continual pressure. To its tube is attached a little ebonite cup about one inch in diameter and one-eighth of an inch deep. This is not for dental use, but I show it by way of illustration. Suppose that I wish to take guaiacol and cocain to anesthetize the skin of the arm. I take a ten or twenty per cent. solution of hydrochlorate of cocain in guaiacol, and if the skin is to be anesthetized, smear it upon the arm, place this little cup against it, and blow this bulb up, and hold or tie it there. You have a continued elastic pressure going on here; you can hear it escaping here as I raise the edge; there is quite a pressure. It is a question of pressure versus pressure. There is the blood pressure on the one hand, and the air pressure on the other. If the air pressure is greater than the blood pressure, then of course the blood is going to retreat into the mass of the skin and the anesthetizing solution will follow it, and you get an anesthetized spot which you can prick and cut without pain. This I have demonstrated beyond question in actual practice.

Now we will see how to apply this to dental practice. Let us illustrate on the blackboard. We have a source of air pressure, a rubber bulb, a cylinder like a bicycle pump or an air pump—any source of air pressure you like. We have our anesthetizing agent; this is a solution of cocain in sulfuric ether, though other solutions may be found to act equally well or better. But the ether solution seems to have a special advantage, and I think it is because the sulfuric ether holds the cocain and finds its way down into the tubles, evaporates, leaves the cocain, and the cocain then takes up a partnership with the fluid lymph of the tubule. The sulfuric ether is what enables the cocain to join in with the lymph of the dentinal tubuli. This also I conceive to be the action of the guaiacol when this is made use of with cocain.

We must also take into account the devitalizing effect of pressure upon the sensitive structure of the tooth; but there is another important truth to consider. As soon as you leave the arterial system and come down to the capillary system, which we represent here by "C" [illustrating by means of a diagram plotted to scale], there is at least one-fifth fall in the blood pressure. In the capillary system this blood pressure comes about to equalize the pressure of the venous system. The actual blood pressure then, when it comes to the capillary system, is very small. The walls of the capillaries have no particular strength, and the blood circulates about in them under very little pressure.

When, therefore, the arterial pressure reaches the pulp-cavity of the tooth it is practically a capillary pressure. That means that you have got very little resistance to overcome by means of your artificial pressure, and this is just what is wanted.

I make here a very rough outline of a tooth which has a cavity in it. For convenience, we will only represent three dentinal tubuli. There is your capillary pressure in there [illustrating on blackboard] at the end of the line. I am going to set up against it an air pressure. I will pass around various teeth that I secured to-day, with cavities in them, fitted with pieces of rubber tubing. The tubing is small, thin and highly elastic, such as all are familar with. Pass the end of a rubber tube like that over the crown of the tooth, and ligature it tight with a bit of floss silk around the neck of the tooth. . Then attach the other end of this tubing to your source of air pressure. At this point you have a little stopcock. Apply the pressure and allow it to act continuously.

If you set up and say an ounce pressure, that ounce of pressure is exercised; the cavity contains the anesthetizing material upon absorbent cotton; put on pressure with the air bulb, and that pressure is translated into a movement of anesthetizing material into the tubules.

The air bulb now acts continuosly by virtue of its elasticity, and you ask the patient to sit down ten, fifteen or twenty minutes, and a continuous effect is being produced by driving the substance into this sensative dentin. We all know how simple the principle is of hydraulic pressure. A very small tube, carrying a jet of water flowing a long time, will exert an enormous ultimate force.

In the case of the instrument I passed around, the familiar pair of rubber bulbs, about five minutes was enough to drive the anesthetizing agent into the skin. In the case of sensitive dentin it might require from that to fifteen minutes.

In fact, the whole process is so utterly simple that it requires very little explanation; it seems that all we have to deal with here is the internal blood pressure—namely, the capillary pressure within the tooth, and the forcing into the sensitive dentin of fluids by reason of the artificial pressure.

I have here a diagram which illustrates what I have said and which I will pass around. I have gone over the ground a little hurriedly, but the method in its simplicity speaks for itself.

Unlike cataphoresis, where there is foundation after foundation to be laid, here in this pressure anesthesia we are treading upon very familiar ground, and if it should prove to be practical in a certain number of cases we should be making a very considerable advance.

I myself believe that practice will lead to several procedures very simple and easy, and that we have got to be familiar with these several procedures.

Now, if you use a sulfuric ether solution of the hydrochlorate of cocain without sealing it with rubber cement, as I in the beginning advised, if you use it without sealing it in or without putting up against it any instrument to retain the ether vapor, then you have still, to a certain extent, a pressure anesthesia by reason of the packing, but not exactly in the sense that I first meant it.

What I present new to-night, and beyond the record, is the simple fact represented by this tooth which I have passed around—a tooth upon which has been passed a rubber tube, which in turn is connected with a rubber bulb, maintaining a continuous air pressure. Anesthetizing material is placed in contact with the sensitive dentin of the tooth thus arranged.

I am sure that enough has been said to open and pave the way for further discussion to night, and I hope we shall hear from some of those who have had experience in this direction. I can only hope that this simple procedure may appeal to your practical sense, and that it may add to and enhance the value of a great number of experiments that I personally know are taking place in your profession in this matter. Probably more of your number are experimenting in this direction than you have any idea of. At this point I will close what I have to say with an apology for my very elemental presentation of the subject.—*Cosmos.*

ARTICLE III.

PRACTICAL RESULTS OF HIGHER EDUCATION.

The problems in education will never, apparently cease to be a source of anxiety to those engaged in training young men for service in the world. The effort to prove that the thoroughly educated man is the best man for all business and other relations has been continuous for years, while the opposite view is stoutly maintained that a theoretical education will disqualify for practical service in proportion to its extent and thoroughness.

That there is much truth on both sides of this much mooted question must be admitted. The thorough mechanic may be developed from the man who has devoted his years to the study of the classics, while it is possible to make a learned man from the blacksmith at the forge, a fact frequently demonstrated. The result depends entirely upon the taste of the individual. The scholar may be a mechanic by inclination and habit of thought. Once started in this direction, he will not only make a good mechanic, but will broaden the entire work through the intelligence acquired in other directions. This is equally true of the mechanic. The surgeon may be learned in medical science, but inability to use the instruments required results badly. It is frequently painful to witness the attempt to perform an operation by one who has never acquired skill in this direction.

While it is true, on both sides of the argument, that here and there exceptional cases pass over the boarderland into the domain of the other, it yet remains a fact that the higher the training the lower the mechanical ability. This apparent paradoxical condition of things will, probably, not be admitted by those who have to deal with dental education, but it has become a serious fact in dental teaching.

The cry for years has been for a higher standard. Dentists of the present and future must possess not only a preliminary education of a very high grade, but they must during the college term be trained in all the collateral branches supposed to be of special value to the medically educated student. This has grown year by year until the dental student has been loaded down with an amount of scientific training that absorbs nearly all the three years devoted to the study of dentistry. It is plain that he cannot accomplish two extremes, and, as usually happens, he drops somewhere between, being neither a dentist nor a mechanic.

The writer has been impressed with the fact for years that dentistry, upon its practical side, has been languishing through higher training. The dentists of to-day are not, as a rule, equal as operators or mechanics to those graduated when two years was the maximum limit of school work, while they are measureably superior in all that appertains to higher scientific culture.

The work of filling teeth is not by the majority as dexterously performed as it was twenty years ago. Then good operations were the rule, now they are the exception. Forty years ago dentists were expected to be able to manufacture metal plates with the skill of the jeweler. Now both operator and plate-worker are to a great degree, lost into the higher training; and unless measures be taken to effect an equilibrum between the theoretical and practical, it will not be a generation before the good name of American dentists will be measurably lost in both branches.

Is there any remedy for this state of things? Can the practical and most important part of dental training be conserved and the other, the cultured, be maintained and possibly increased?

It must be apparent to all dental educators that a remedy for this must be found, and that speedily. The students of our best dental colleges are overworked mentally and physically. The curriculum is crowded with subjects. The—so-called—technic training absorbs altogether too much time in the freshman year. A limited amount of this is essential, but the student, at the earliest period, should be placed at the threshold of his serious work in life, upon the the living subject.

The Technic Association recently met in Cincinnati and spent two days discussing these preliminary problems. While this may be well, and the time and money expended not lost, yet it does seem to the writer that there is altogether too much of this kind of work required in the schools.

If this technical work is to be continued and extended, then we may look forward, not to a four years' course, but to a five or even six. There must be a limit found somewhere to this overloading.

The work, as now performed, would, probably not be a serious drawback to acquirement of skill were it properly systematized, but this cannot be done in dental schools as now managed, for the teaching there is not done by men trained for the special purpose of teaching, but by persons taken from the ranks of practitioners, whose livelihood is dependent, not on the emoluments derived from teaching, but from practice. This divided loyalty produces the legitimate result,—imperfect work in the, to them, least important duty.

There is another point worthy the earnest consideration of dental educators. Many of the dental colleges have selected for the most responsible position, that of Dean, a practitioner of medicine. However worthy and skillful in his own line of work, he is not fitted, by training or inclination, for that duty. The result is a lamentable weakness everywhere. This selection is in direct opposition to all experience. The large mechanical establishments would treat with ridicule the proposition made to place at the head of any of these, as general manager, a man trained in law, theology, or medicine, yet this is exactly what is being done in many of our dental colleges. A dental college is a large manufacturing establishment, and to conduct it rightly it must be managed by men trained in that direction and upon strict business principles, or it will be a failure.

Is there any remedy for the condition that confronts dental educators to-day? The answer to this must be found somewhere and somehow. In the opinion of the writer the solution of the problem must be in an entire reorganization of methods.

Pedagogy is a recognized science, and must be applied here as elsewhere. There is a class of mind in every circle that tends in certain directions. It is this variety of intellect that gives force to all the occupants of life. Some will incline to mechanics, others to the purely professional, some find pleasure in teaching. In dental training the latter are indispensible, but as affairs are at present managed these are practically lost.

The first duty of those engaged in dental education would seem to be to select young men exhibiting this talent, and train them for the work. Place them first in subordinate positions, and as they show ability in imparting knowledge make their positions permanent at a continually increasing salary, so that all temptation to practice may be eliminated. In other words, make the position one of life interest, as in other important occupations.

Then systematize the whole method of teaching. Give the student elementary technics, but as early as possible place him on the living subject. Utilize every hour in the day, that no time be lost. Do away with all useless modeling in clay, or carving in other material, making drawings of teeth on paper, or measuring angles of excavators and pluggers, and, in the place of these time-wasteful methods, add on the higher branches, and extend these to the fullest extent compatible with time and the strength of the student. Make the course four years of nine months each of continuous labor.

It may be said that this is a Utopian idea and can never be carried out. It is to the writer a very simple problem. It will, of course, mean the destruction of many dental colleges, for it is understood that there are many schools in small places that would find it impossible to meet these demands, but, on the other hand, there are colleges now established that cold do this and could well afford to make the experiment. The question must be met, for the schools at present are drifting along with haphazard methods that were sufficient for the requirements of the past, but are wholly unsuited to this age, when the demand is for cultivated minds combined with manual dexterity.

Dentistry needs all the intelligence that it is possible to acquire, and it would be folly to eradicate the higher mental development, as it would be equally disastrous to eliminate practical skill. Both must go together, and that college will serve the profession best that can demonstrate the way in which both can be conserved to the advantage of dentistry and to the benefit of humanity.—*International Dental Journal.*

ARTICLE IV.

IS DENTISTRY A REMUNERATIVE PROFESSION?

The close of the present term in all the dental colleges leads the thought in the direction of the graduating classes passing out to the great world of activity and becoming part of its working life. There is probably no duty of the conscientious professional teacher that carries with it a heavier burden than the anxiety as to the future of the hundreds of young men he has assisted to prepare for the competitive struggle that lies before them. This anxiety is comparatively of modern growth in dentistry, for the college, as late as 1876, that had ninety dental students in the school was regarded as eminently successful. While many of the smaller schools at present do not exceed this, others have four hundred as the normal number, and several have five hundred, with the prospective assurance of extending these limits.

The reason for this great influx into dentistry is not far to seek. The tendency to centralization of capital in every direction, while it may not, as often asserted, make the rich richer and the poor poorer, it does keep the young man of limited means in a subordinate position, bound to long hours of work, with a salary that will scarcely meet his own needs, much less enable him to assist in the maintenance of others. If gifted with extraordinary ability, he may hope eventually to rise, in the distant future, to the position of general manager, but this is so remote that a pessimistic spirit takes hold of his entire nature, and discouraged, he drops into the ruts of routine life in which he becomes simply a machine for capital to use and exhaust. This state of affairs has assumed serious proportions, and is bound to disturb, sooner or later, the economic conditions of the world. If capital does not create poverty, it at least does create a species of slavery in which men and women are bought and sold through certain hours of every day, and during these periods have no will of their own. This is not all evil, for the majority of workers, who are, perhaps, not qualified either by mental training or natural force to be leaders, drop, by mental gravitation, into subordinate places and are content.

This is, however, not the case with many who have been educated for higher things. The technical schools are turning out yearly great numbers of young men as civil, mechanical and electrical engineers, fitted to hold high positions, but who are forced to accept, for long periods, barely sufficient remuneration to keep life together. When, in after years, this may have been increased to the daily wages of the carpenter and bricklayer, it still means a perpetual struggle, and hope dies in the effort.

Parents have sounded the prospects, to some degree, of these various callings, and have hesitated to send sons to institutions for four years, at great cost, to find, in the end, every place crowded.

The result has been that parents, whether wisely or unwisely, have determined for themselves that that profession is the best which for the least outlay of capital, will furnish an independent livelihood, and this they deem to exist in dentistry and medicine, preferably the former, for it requires, after graduation, less time to become self supporting. The instinct of parents—for it can scarcely be called knowledge—is mainly correct. The stomatologist occupies a truly independent position, and while his income will rarely reach that of the successful practitioner in medicine, he is more comfortably fixed, in that he not only controls his life-work, but is far more independent as to hours of labor.

This brings prominently before the mind the thought, is dentistry, as practiced to-day, a remunerative calling? If this were not so it would scarcely be worth the labor that is being devoted to it in the educational sense, for whatever may be thought of dental educational methods and institutions, and they are constantly subjected to severe criticism, they are not turning out dentists by the wholesale without an anxious regard to their future well-being.

The writer of this has made this subject one of careful study, and has become convinced that the growth of knowledge upon dental subjects by the people at large fully warrants the apparent over production of dentists. The care of the teeth has ceased to be luxury of the wealthy, but is eagerly sought by those of moderate means, and even the very poor crowd our college dispensaries. In fact, at no period has the value of dental service been more thoroughly appreciated. The lessons so laboriously taught by the pioneers in the profession are bearing rich fruit, and to meet the demand of these occasions there must be a continued and increasing development of skilled men and women.

This means a gradually decreasing clientage for each practitioner. In the earlier day it was in proportion to population, one dentist to each seven to ten thousand inhabitants; now, if the next census gives seventy-five million inhabitants to the United States, and we have twenty five thousand dentists—Polk's Register says over twenty thousand—we have this reduced to three thousand to each practitioner. While this seems to be a serious reduction, it is more apparent than real, for the higher dental education of the laity amply makes up for the loss of numbers upon the financial side, and more than compensates for this loss by the intelligent appreciation of the work, which to the true stomatologist is more than money.

It is true that dentistry, as a money-making profession, is not equal to others. Taking the country through, it is questionable whether, from the increase of the profession, it would average two thousand dollars a year. This means but small savings, for expenses grow, with alarming proportions, as practice increases. It is thought, however, that while it requires more capital to-day to begin the practice of dentistry than it did forty years ago, that capital is well expended, for it gives greater facilities for accomplishing the work, and consequently increased ability to earn with far less labor.

It has been a current thought in our literature that all a dentist leaves his family is a life insurance policy. This was largely true in former years, but dentistry has been placed upon an altogether different basis, and the more the true professional spirit is infused into practitioners the more will this be increased. Dentists must learn to enforce a proper remuneration for services rendered. This should be rated according to the value these are to the patient and the reputation of the operator. There is too much of the mechanical or shopkeeping idea extant, of remuneration at so much per tooth. The operater should be paid for his time, independent of all expense to which he may be subjected.

It is difficult to understand the many life wrecks in the history of dentistry. Indeed, these, in the writer's memory, exceed the successes. The number of the latter, however, in recent years, enforces the belief that with the change of methods of practice has come a more economic arrangement of the time and means, and that in the near future there will be fewer of those unfortunate examples to disturb the thought of those entering professional life. Dr. Allport, of Chicago, was one of those who combined professional excellence with business methods. He publicly deplored, upon a certain occasion, that so few dentists husbanded their means for the period when old age would render them incapable of work. There seems to be no reason why a dentist should fail to accumulate a reasonable sum directly from professional labor. The temptation to some is to enter into hazardous speculation, for which they are poorly fitted, or to take up with side issues which always detract from their ability; in fact, this division of interest invariably tends to lower their work, and it becomes purely mechanical, the professional dying out altogether.

The conclusion is inevitably borne out by the facts, that dentistry is not overcrowded; that there is room for all these young graduates, provided they exhibit a marked aptitude for their calling: and, further, that an economical administration of practice will result in ample means for comfort, and even luxury, and, at the end, something will be left for those dependent upon them. This is more than, it is feared, can be accomplished by those in other branches of professional work. —International Dental Journal.

ARTICLE V.

FAILURES IN BRIDGE-WORK.

DR. F. M. WILLIS, ITHACA, N. Y.

This will undoubtedly appeal to every dentist, because we have all seen failures in bridge work. Some of us have made failures, and to such persons anything said in favor of bridging will be of unusual interest. A great deal has been said and written recently which has been adverse to this branch of dentistry, and perhaps a few words from one who is making bridge work a life study might encourage some disheartened one who is ready to give up such work on account of a few failures.

The dentist who saves teeth is the greatest benefactor to the human race, and next to him is the one who can supply lost teeth by the most useful and comfortable method. Bridge work fills a place in dentistry which can never be taken by anything else. A properly constructed bridge on suitable anchorages is the most useful, comfortable of all artificial substitutes. Why have there been so many failures in this particular line of work ? I shall endeavor to point out some of the reasons.

In the first place, the construction of bridges has been attempted by men who have not been properly instructed in this line of work. Until recently the colleges have not given sufficient instruction in bridge work, and so the college graduate has attempted to do something which he did not understand, and the result has been failure. Then, too, a great many who were already in the profession when bridge work was first introduced, have attempted to do this work, having had but little, if any, instruction, and the natural result has been failure. To be a successful bridge worker requires a thorough knowledge of working metals, intelligent instruction in this particular line of work and a large share of practical experience.

In the second place, failures have resulted from using unhealthy teeth or roots for abutments, or from attaching too large a bridge to too few anchorages. Experience has proven that the most successful bridges have been small ones which were attached to strong, healthy teeth or roots. Large bridges of ten, twelve or fourteen teeth are seldom admissible under any circumstances. Sometimes it is safe to supply an entire upper or lower denture by three or four small bridges, but it is very seldom wise to construct a permanent bridge of more than six or eight teeth in one piece.

Another cause of failure is the lack of knowledge in the construction of the Richmond crown. For a single crown it is sometimes possible to get along without banding the root, but as a supporter for bridge work nothing short of a properly constructed Richmond crown will serve for the anchorage to any of the anterior teeth. A properly constructed Richmond means a healthy, well-filled root, the end of which must be reduced to the inverted cone shape, a delicate, well-fitting band under the gum, a strong platino-iridium post in the root and a snug fitting porcelain, the cutting edge of which is sufficiently protected by gold so that it will not break in mastication. This protection can be obtained in such a way as not to show any gold, and yet absolutely prevent any danger of subsequent breakage from mastication.

Other failures have resulted from ill-fitting bands in making the anchorages. The edge of the band near or under the gum must fit absolutely. If the tooth cannot be trimmed so that the band will fit closely under the gum, then it will be better not to extend the band beyond that portion of the tooth where it does fit closely. It is seldom absolutely necessary that the band on any of the posterior teeth should extend under the gum, so that any future decay may be properly cared for. An ill-fitting band that extends under the gum hastens decay rather than prevents it, and in such a case the decay is not likely to be discovered until the anchorage is almost, or entirely destroyed. No artificial crown will prevent decay unless it is an absolute fit and unless the tooth or root can be kept perfectly dry until the crown is cemented.

Another difficulty arises from too much grinding of teeth with live pulps. A live tooth will always last longer than one with a dead pulp, but a live pulp has often been destroyed by entirely denuding the tooth of enamel, in order that the band might fit well under the gum. A live tooth should be ground as little as possible.

Many times bridge work fails because it is not made strong enough. It has been said that in constructing bicycles, the strain which the machines will be required to stand is carefully computed, and then they are made so that they will withstand five times that strain. The same rule should be adopted in bridge work; make them five times stronger than seems necessary.

The occlusion with the teeth in the opposite jaw has a great deal to do with the success of bridge work. Nothing short of perfection in particular will answer. A faulty articulation will often destroy what might otherwise be a permanent and satisfactory piece of work.

Any cavities, or even slight decay, about the anchorages should be carefully filled before the bridge is cemented. It is also a wise safeguard to dry the teeth or roots carefully, coat them with nitrate of silver and then drive off all moisture with a hot air blast before cementing any bridge. If the anchorages are Richmond crowns, it is well that the cementing be done as suggested by Dr. Evans—by coating the posts with chloro-percha and trying on, then cement in the usual way. By applying a warm instrument to such a bridge for five minutes the gutta percha will soften and the piece can be removed.

The last reason for so many failures is the greatest reason of all. Dentists who are not skilful enough to construct their own bridges will take an impression of the case and send a plaster model to some of the numerous laboratories where bridges are constructed with neatness and despatch, and expect the result to be satisfactory.

Bridge work done in this way will rarely be successful, and such procedure cannot be too strongly condemned. No man ought to attempt bridge work who cnnnot do the work himself, and begin by fitting the bands to the anchorages in the mouth. Bands fitted to plaster models may succeed in some cases, but no method is so satisfactory as to fit the bands to the teeth or roots in the mouth.

Patients will often ask how long bridge work will last. I used to reply, "It will last a lifetime;" now I reply, "It will probably last several years." I find by experience that the latter statement is safer. A bridge which gives the patient good service for five, eight or ten years should not be considered a failure. In fact, I find many patients who are willing to endure the discomfort and expense of having bridge work done, if they can be assured that it will last five years.

In skilful and conscientious hands, bridge work is not a failure. On the other hand, a great many patients who are wearing clean, strong, useful bridges are willing to testify to the fact that bridge work is a success.—*Items of Interest.*

ARTICLE VI.

ALVEOLAR HEMORRHAGE.

DR. W. A. WHITE, PHELPS, N. Y.

In the May and June issues of "Items of Interest," I noticed records of cases of alveolar hemorrhage; one by Dr. H. H. Benjamin, of Bavaria, N. Y., and one by Dr. Charles P. Chupein, of Philadelphia, Pa. Having recently had an unpleasant experience of this kind, and believing it worthy of notice, I send you the facts.

The patient being a gentleman, a prominent business man of North Adams, Mass., aged sixty-one years, during the past two years had been in very feeble health, attributed to a complication of troubles, principally an aggravated liver disease. He had received treatment by several noted physicians and at various sanitariums, but seemed to be gradually failing. Some six weeks ago he placed himself for treatment under the care of Dr. P——, of this place, and was seemingly improving daily. He wore a full upper denture, and several years ago lost all his teeth back of the second bicuspids on each side of the lower jaw. All of the remaining teeth were broken off to the gum line excepting the cuspid and first bicuspid on the left side; and the second bicuspid on the right side, and these were badly decayed. From these he suffered much, and after several appeals to his attending physician, an appointment was made to have them extracted: At 9.30 a. m., May 26, Mr. D.; in company with his wife and Dr. P. came to my office. Chloroform was administered, and the teeth above mentioned were extracted. Complete anesthesia was produced, and the operation was finished within half an hour, the anesthetic being administered withour any unpleasant symptoms; only the normal bleeding followed. At 10.15 they left the office, the patient apparently being the jolliest one of the three. After arriving at his room, Mr. D. lay down to rest, and dropped off to sleep, at 1 p. m. he had a severe chill, when the doctor was called, and soon gave him relief. Shortly after the physician had left and the rigor had ceased, the hemorrhage began. He had been bleeding profusely for an hour when I was called at 2 p. m., when I found the patient in so weakened a condition that from the first it seemed like a hopeless case. I packed the cavities with pledgets of cotton saturated with phenol sodique and tannin, which was the only hemostatic used. By 3 p. m. the hemorrhage had entirely ceased, and save the exhausted condition of the patient the indications pointed to recovery. So fearful was he that the hemorrhage would return, at his request I remained with him all night. He rested well, and was awakened occasionally to be given his remedies, together with a little beef broth as nourishment. The heart action with the radial pulse was noted at intervals, and was strong, considering the shock the patient had suffered. His condition without change remained the same until 5.30 Saturday a. m., when he grew very restless, and I was hardly able to detect the radial pulse; while the heart gave evidence of weakening. His physician was called, who at once recognized his condition. Dr. H. was summoned in consultation. Both physicians used every means to save the patient, but he died at 12.30, May 27th.

While I am convinced that the debilitated condition of the man was not equal to the operation, I am strongly of the opinion that, had either his physician or myself been called when the hemorrhage first commenced, the result might have been different. It was estimated that he had lost three quarts of blood before aid was summoned.—*Items of Interest.*

ARTICLE VII.

COMBINATION FILLING.

F. B. SPOONER, D. D. S. BROOKLYN.

For the last two years I have been experimenting to find the "ideal" filling so long talked about in our meetings. I do not mean to say it is found, but will give the result of my efforts.

We all know the essentials of the "ideal." Gold costs too much in time and material. Amalgam shrinks, discolors, and is a conductor. Cement is perishable, but ideal in all other respects. Could we get cement to be as lasting as amalgam, what a stride it would be.

The method which I shall describe occurred to me while I studied the manner by which the crumbling of the river bank at Wheeling is prevented. There the approach of the river is paved with stone mixed with the soft earth. This is done so that the wash of the river at high mark, and the passage of vehicles shall not wear through. The same thing is seen in a chimney exposed to long years of weather. If it were made of mortar, it would soon succumb, but as it shows, the mortar is eaten out between the bricks only to a degree.

The conclusion was reached that if I could mix my cement with metal cobblestones, the wash of saliva and other causes of disintegration could be lessened.

Mixing my cement with various quantities of alloy, I finally hit on this. On a pad was placed two equal piles of material, one amalgam, the other cement; also acid Q. S, The alloy was *first* mixed with the liquid. Why? To be sure that the metal becomes thoroughly coated with the liquid. No fear that the cement would finally mingle with the acid, and also form perfect union with the metal. Next mix the zinc powder with the wet alloy, working it up to a tolerably stiff mass. It may be said, by the way, that there is *much* in spatulating cement. It should be so done that all parts be thoroughly incorporated.

A lesson may be taken from a laborer who mixes mortar with hair, sand and lime. There should be a chopping, grinding, pressing, rotary motion, all at one and the same time.

The mass hardens quickly, and so has to be handled with expedition. Sometimes I put a part of the softer mix into the cavity, following with the stiffer. In this way I get more adhesion with the one, and strength with the last. A surplus is put in while an instrument dipped into the powder can be used to contour the filling to the edges. A matrix is also used slightly oiled, when it is desirable to do so.

Stress is laid on first mixing the alloy with the liquid. At the risk of being tedious, will say that it is to ensure the cement going into the intermolecular spaces, formed by the alloy as the molecules. As the alloy is first coated with the fluid, it is certain that the cement will adhere to the metal, leaving no soft spots. Hence the great point is "if you use it, use it right." Moreover, I speak of the way, as already a method has been advocated of mingling cement and alloy which has been briefly told of in an Atlanta magazine. I read of the same while pursuing my researches.

I do not think that alloy is necessary for the work; on the contrary, tin fillings would be preferable on the ground of cheapness, and that discoloration would not occur,

We have for this filling the following advantages:

A non-conductor, better than amalgam.

Adhesive, holding together frail walls,

Result, a filling that will not expand, contract, or discolor; a filling that will not wash or wear away as soon as cement.

As this combination has not been in use more than two years, data as to its permanence is not obtainable, although up to date the results are favorable. Time must show how far it falls short of amalgam in resistance to mastication. Still this feature is far from *all* in fixing the value of a filling. Those fatal margins will always menace an amalgam. As a rope "is only as strong as its weakest point," so a filling with this weakness may fail in the long run against a material with tight edges, but less ability to resist attrition.

This much seems fair to conclude that (while I am far from desiring to discard amalgam) there are times when it is not indicated, and that if only the life of a cement filling is prolonged, it is a step onward.—*Items of Interest.*

ARTICLE VIII.

A PECULIAR RESTORATION.

ELLISON HILLYER, D. D. S., BROOKLYN.

The crowning of an upper lateral incisor is an easy matter where conditions exist which warrant the cutting off of the tooth and the usual procedure of root trimming, concluding with the usual crowning.

When a case presents which requires restoration, such as the following, some study of the case is necessary to meet the required success. It is with this thought in mind that I take up the description of this case, trusting it may be of benefit to some one.

The case presented a perfectfy formed upper arch with the exception of the lateral incisors; the right lateral was missing with no space between the central incisor and the canine; the left lateral was a mere peg-shaped tooth of nearly the proper length, but in other respects undeveloped (as far as shape is concerned). To restore this to proper shape and appearance was the object.

The patient, a young lady and a singer, felt the effect of the appearance of her mouth when showing her teeth, and the result was an habitual dropping of the lip upon the left side in the endeavor to cover the defect. A further object, therefore, was to correct this habit.

The tooth, peg shaped though it was, was fully alive, with perfectly formed enamel and no cavities. The plan of destroying the pulp and utilizing the canal did not appear advisable, nor did I desire to cut off the tooth. I finally decided to proceed without disturbing the existing conditions.

As the recital of failure is often as valuable a guide as of success in warning how not to proceed, and as ultimate success crowned my efforts in this case, I will tell how the first attempt did not succeed and why.

After making a die and counter-die and swaging a perfect fitting cap for the tooth of thin platinum, I selected a lateral tooth suitable as to size and color; then without regard to the pins I ground the tooth to fit over the labial aspect of the cap in position upon the tooth. This completed, I baked the two (cap and porcelain tooth) together with continuous gum body. When cemented upon the tooth, the condition appeared quite satisfactory for a short time, at the expiration of which the patient returned with the facing bitten off. The conclusion was that the porcelain was not sufficiently strong in itself to withstand the strain. So much for the failure.

Proceeding with a capping of platinum similar to the first, I selected a cuspid tooth about twice the required length, or at least long enough to cover the peg-shaped tooth with the porcelain above the pins, I then cut off the remaining portion of the porcelain tooth below the line of the pins and ground to fit the capping, as before, but preserving the pins. I used in this instance a cuspid tooth for two reasons; first, to match the opposite cuspid (the right lateral being missing), and, second, to allow a little extra support of porcelain to the pins by the pointing of the tooth. The appearance of this tooth was better than the first.

With the porcelain tooth in position against the platinum capping, I bent up the pins on each side of the capping and soldered with pure gold, subsequently covering the back with continuous gum body as before. This, when set upon the peg-shaped tooth, restored the part satisfactorily, and has given active service for about a year, and seems good for prolonged use.—*Items of Interest.*

ARTICLE IX.

DENTISTRY IN THE ARMY.

HOMER C. CROSCUP, D. D. S., BROOKLYN, N. Y.

Having had some experience in the Army during the Spanish-American war, it might be interesting to the members of the Second District Society, as well as the profession at large, to know to what extent dentistry is practiced in the service.

In the first place the Army regulations make no provision for dentists, therefore, the enlisted men, and also the officers, are put to a good deal of inconvenience and expense at times, particularly in time of war, when it becomes necessary for them to have dental attention, necessitating their being absent from the post, garrison or camp for a considerable time, especially when the nearest dentist may be located many miles away.

My connection with the Army was not in the capacity of dental surgeon, nor in the medical department, but as a line and field officer in the Fourteenth Regiment of Infantry, United States Volunteers, having served successively as First Lieutenant, Battalion Adjutant and Captain under Colonel, now Brigadier-General Frederick Dent Grant.

Thinking, however, that I would possibly be of service in my professional capacity during the campaign, I provided myself with a few forceps, lancets and other instruments for emergency cases, which I packed up with my other belongings for future use.

My regiment was mustered into the United States service at Camp Black, Long Island, on May 16, 1898, and there being a report that Spanish gun boats were dangerously near our coast, our plans for going by transport to Tampa, Florida, were abandoned, and we proceeded by rail to chickamauga, Georgia, on the following day, where we established a permanent camp, remaining there until late in August, when we were sent to Anniston, Alabama.

The nearest town to the Chickamauga camp is Chattanooga, Tennessee, eleven miles distant. At first we were fortunate in having a dentist in the hospital corps, Dr. Alfred M. Borton, who left a practice in Brooklyn to see service at the front, but who is now with the great majority, having contracted typhoid fever soon after the regiment reached the South, from which he died after a few days' illness. Truly a hard death for a soldier.

It was then that I began to realize that I was likely to be kept busy in the dual capacity of dental surgeon and company commander, there being about thirteen hundred men in my regiment, and five other regiments of different branches of the service, with about the same number of men each, stationed in close proximity. I found they were as badly off so far as dentists were concerned as the 14th; in fact much worse. As far as I have been able to learn I was the only dentist, after the death of Dr. Borton, in the entire first division of the Third Army Corps.

It became necessary for me to systematize my work in the dental line, as my other duties were various and did not permit of interruptions, so I arranged to be at the hospital tent one hour each day to attend all comers, and nearly every day a line of from twenty to thirty awaited my arrival.

Of course, extraction, in the majority of cases, was the necessary treatment under the circumstances, but if I had been prepared in the capacity of dental surgeon, nearly all the teeth thus sacrificed could have been saved.

In many cases the teeth had been broken by accident; it would have been an easy matter to extirpate the pulps and prepare the teeth for crowning. Many of these accidents occurred in the regular drills and exercises, while serving under the government and under orders, and the least Uncle Sam could do, would be to give them proper care and treatment.

I remember upon one occasion after a drill in battle formation, extended order, two men came to me suffering from fractured incisors, one having been struck in the mouth with the butt of a rifle, breaking off the right superior central and lateral at the gum margin. From both roots the pulps protruded. I prepared sharp pieces of wood dipped in carbolic acid and forced them into the canals. This is an ancient practice and it came in handily at that time. I have subsequently placed crowns on both roots.

I had many cases from other regiments where the surgeons had made heroic attempts to extract refractory molars, finally sending them to me to finish up. They, however, could hardly have expected to be successful with the instruments at their command.

Many lesions commonly observed in dental practice were met with, such as pulpitis, pericementitis, alveolar abscess, pyorrhea, epulis, diseases of the antrum, etc., etc.

Of course, only a small proportion of the Army came under my personal observation, but that was sufficient to demonstrate the fact that it is a duty which the Government owes its soldiers to make provision for the proper care of their teeth, and to provide dentists as a recognized part of the Army establishment.

Of course, the fine, delicate and intricate operations could not well be performed in the field, but good, honest and conscientious dentists could always find a way to give good and faithful service, even under the most adverse circumstances, and this would be a great benefit to both officers and men. On the other hand, many young dentists would be glad of the opportunity to serve in the Army as dental surgeons, even though the remuneration be not as lucrative as in a private practice.

When the Hull bill was formulated, it provided for one hundred dentists in the Army, with the rank and pay of First Lieutenants. That would be about $1,800 per year. Unfortunately, this bill was so defaced previous to its passage by Congress that it was hardly recognizable, and the section relating to dentists was stricken out to make room for something else. Knowing, however, the advantage this would be to the service I am still hopeful that it may yet becoms a law.—*Items of Interest.*

Monthly Summary.

ALVEOLAR HEMORRHAGE.—Having read the articles on "Alveolar Hemorrhage" in the May and June "Items of Interest" I wish to report a case that came under my observation. My case was similar to Dr. Benjamin's, reported in the May number.

In the fall of 1887, I extracted the upper teeth for a maiden lady preparatory to a plate. There was nothing unusual in the force used. The extraction was done in the forenoon. In the afternoon, about three o'clock they reported to me that the lady was suffering from severe hemorrhage. As she lived only across tbe street from my office, I went with them to her home. Thinking that the bleeding was from a few sockets only, I packed them with cotton and tannic acid. The hemorrhage did not subside. The family were very much alarmed, and asked me if they could send for their family physician. I replied, certainly, but that I should like to be called when he arrived.

In about an hour's time Dr. C. came, and I was noticed. Dr. C. was using medicine, and the mouth was so full of clotted blood that the lady could hardly swallow. An attempt of thirty or forty minutes failed to arrest the hemorrhsge. The physician then turned the patient over to me. Having thoroughly cleansed the mouth, I took a wax impression of the upper jaw. I made a plaster cast formed a trial plate of gutta percha. Then a roll of gutta percha, quite soft, was placed on the trial plate directly over the sockets. I placed the trial plate with the softened gutta percha rim in her mouth, and had her bite into it. After hardening the gutta-percha with cold water I bendaged the jaws. Within a few minutes the bleeding ceased, and did not recur when my compress was removed the next day.

In twenty years' practice this is the only case of hemorrhage I have had where all the teeth were extracted.

My only claim for originality is in the use of a compress for the whole upper jaw.—*Items of Interest.*

TO APPLY THE RUBBER DAM.—In order to get the rubber-dam well up on the neck of the tooth, so as to obtain a clear view of the cervical margin of the cavity about to be filled, wrap a piece of dental floss or filling thread twice around the tooth, and push this well up on the neck of the tooth, then tie. Let this remain for a couple of days, and when the patient returns, the application of the dam can be made with ease to the operator and with little discomfort to the patient, affording a perfect view of the parts to be operated on. Should there be a large space between the teeth, the interdental space *below the ligature* may be filled with cotton steeped in sandarac varnish, or with pink gutta-percha.—*Dental Office and Laboratory.*

ARSENICAL POISONING CURED BY ORTHOFORM.—I had a case of acute arsenic poisoning with the conditions present so familiar to all. With spoon excavator removed the blackened gum tissue, syringed parts with warm antiseptic solution, soaked gum and surroundings with dialysed iron, and applied twenty-five per cent. unguent orthoform. The pain in this case was the severest I ever saw, and I must admit being astonished when the patient returned on the following day and reported that pain stopped and not returned. Relief came within twenty minutes.—*A. D. Kyner*, *Items.*

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

Vol. xxxiii. Baltimore, October, 1899. No. 6.

Selections.

ARTICLE I.

A MISTAKE IN DIAGNOSIS.

H. C. GILCHRIST, D. D. S., NYACK, N. Y.

As we all are liable to make mistakes at times in our diagnosis of different cases, I report this incident of office practice as it may benefit some one in the future who might have a similar case.

Miss T——, a young lady of about twenty years of age, came to me for consultation regarding a fistulous opening in the right superior maxilla just back of the of the second molar. She stated that there had been a slight flow of pus for about three months previously accompanied with neuralgia pains which had been a great annoyance to her. Upon examination I found I could pass a probe up through the fistulous tract for about one inch before I came in contract with any obstruction.

I diagnosed the case as encysted wisdom tooth due to lack of room for eruption and stated that it would need to be removed before the jaw would get well, but she was a little in doubt as to my opinion and decided to wait awhile before submitting to an operation.

Her home being in Florida, I did not see her again for one year, after which she came to my office accompanied by a physician, who stated that something must be done for her, as she was very much reduced in health and quite worried in mind.

Upon questioning her I found that she had been through the hands of several physicians and dentists at her home, all of whom had diagnosed the case as one of necrosis of the jaw bone, except one, and he said that it was a cancerous formation and that the only remedy was an external operation.

But inasmuch as she was a pretty and prepossessing young woman she had hesitated to have the operation performed until she had seen me once more, whereupon I made another examination with her physician, and again I diagnosed it as an unerupted wisdom tooth, but he seemed to think that it was necrosed bone.

I gave her gas and extracted her second molar tooth, then with my lancet I opened the gum from the socket of the extracted tooth to the fistulous opening, cutting down to the bone of the alveolar process. I then ordered the wound to be kept packed with antiseptic gauze for one week, changing the gauze each day. At the end of that time I removed the gauze and upon an examination with the mouth mirror I discovered the glistening surface of a tooth. The attending physician then admitted that I was correct in my diagnosis after all.

I administered gas again and undertook to extract the tooth, but much to my amazement just as I attempted to grasp the tooth it disappeared from my view; in feeling for it with a probe I found a pus cavity about half an inch in diameter and the tooth at the bottom of it.

The patient being somewhat exhausted I deferred the removal of the tooth until another time. The next day her physician in probing in the cavity dislodged the tooth and it fell down in her mouth. She came to me with it in her hand and with a smile upon her face she expressed her gratitude for what had been done for her.

I kept the cavity open with a strip of antiseptic gauze so as to allow the healthy granulations to deposit at the bottom of the cavity and directed her to use Listerine as a mouth wash. This was kept up for about three weeks, when the wound healed nicely, leaving the jaw and the surrounding parts in a perfectly healthy condition.—*Items of Interest.*

ARTICLE II.

STERILIZATION IN DENTAL PRACTICE.

T. C. VAN KIRK, D. D. S., ALLEGHANY, PA.

(A paper read before the Odontological Society of Western Pennsylvania, at Pittsburg, March 14, 1899.)

ABSTRACT.

Sterilization may be defined as the process of destroying all spores and germs, with the view to prevent the development of bacterial or other organisms.

To the surgeon it is not only important to destroy all germs which may have found lodgment on the instruments and appliances employed in his operations, in order to prevent the infection of his patient by pathogenic organisms, but also to be scrupulously careful after the operation to prevent their admission or inhibit their growth by the use of antiseptic dressings: in other words, complete sterilization is the "Sine qua non" of the careful surgeon of the present day.

The importance of, or necessity for sterilization, implies the probable presence of pathogenic bacteria in all cases operated upon. Miller has demonstrated that there are twenty-two mouth bacteria; of these, eight or ten are almost constantly met with, and six are invariably present. Besides these mouth bacteria, nearly all of which are non-pathogenic, almost every minute organism which has been described as growing in any position, has been found in the mouth. In other words, the mouth is the typical incubating chamber for the culture of almost all germs. During epidemics or when persons come in contact with those suffering from various zymotic diseases the organisms associated with them are frequently taken into the mouth.

Surgeon-General Sternberg, of the United States army, an eminent authority on bacteriology, states that he has found the pneumo-coccus constantly present in his own mouth, and that he has repeatedly caused pneumonia, followed by death, in rabbits, by injecting them with the saliva taken from his mouth when in a state of perfect health.

Numerous authorities might be quoted substantiating the foregoing statements, but time will not permit. I have thus shown that even in the most healthy mouths, to say nothing of these contaminated by disease; such as tuberculosis, erysipelas, syphilis, etc., there may be present micro-organisms, which, becoming attached to our instruments, may by accident or otherwise be introduced into the system of the patient himself or of some succeeding patient, or even of the operator, with calamitous results.

Muir and Ritchie in their Manual of Bacteriology say that all bacteria can be killed either by heat, drying, starvation, or by chemical agents; of these, chemical agents commonly called germicides, are most frequently used. As a general rule the two chemical agents which heretofore have most frequently been used are a 1 to 20 solution of carbolic acid, and a 1 to 1,000 solution of bichloride of mercury. But these do not meet all the requirements of a sterilizing agent for a dental office, not only because of the time required in some cases for complete sterilization, but because of the corrosive action on steel instruments, and because some articles would be destroyed by being immersed in these solutions. Many have, therefore, taken advantage of the principal that all bacteria are destroyed by heat, and have advocated this method of sterilization. This, again, presents disadvantages to the dentist, as the high temperature necessary to kill the spores of some bacilli, injures the temper of delicate steel instruments.

The hands of the operator should be washed and disinfected after each operation; not as an act of cleanliness merely, but as a safeguard, for himself and succeeding patient, against possible infection from a previous patient.

My own method after washing, is to apply to the hands a small quantity of borolyptol, allowing it to dry upon the skin.

The mouth of the patient may be rendered practically sterilized by use of some one of the many good antiseptics that are now available. Of these, borolyptol is coming into popular favor. A small quantity held in the mouth for a few minutes arrests the growth of the microorganisms. Tubes of agar planted with saliva from the mouth, after exposure to borolyptol, shows no growth after forty-eight hours incubation, while tubes inoculated from the same mouth before the application just stated gave abundant growth, thus showing that borolyptol has at least the power of inhibiting the growth of mouth bacteria.

With regard to borolyptol, I think it might be safely used for sterilizing instruments, as only a slight tarnish was formed on steel instruments immersed in it for thirty-six hours, but this is longer than is necessary to accomplish sterilization; half an hour's exposure produced no tarnish whatever.—*Dental Brief,*

ARTICLE III.

A DENTIFRICE.

DR. W. J. WALLACE, SAUGERTIES, N. Y.

What is offered may not be new, for a wise man of old has told us "there is nothing new under the sun," but it is original in one sense, as I have never seen the same formula in print.

While attending the New York Dental School in 1893-'4, one of the lecturers mentioned the requirements of a dentifrice, but left each student to study out what was necessary, and I judge others are no better instructed.

Dentifrices supplied by the drug stores are generally chalk and some scent, or chalk and carbolic acid, if in powder form. If a paste, castle soop is added. The fluid forms have a decoction of soap bark with aromatics. These are good as cleansing agents, but other things should be considered as well. The formula which I offer is:

Precipitated chalk, - -	lb. j
Bicarbonate of soda, - -	℥ iij
Cocoa butter, - - -	℥ ij
Oil of cassia - - -	ʒ iv
Krameria tincture, - -	ʒ iij.

The proper mixing of the ingredients is a matter of some importance. Melt the coca butter over steam, as it scorches readily, then add the oil of cassia and krameria, stir well and then incorporate the soda, and lastly, the chalk. After stirring well together, turn out on a piece of heavy sized paper and spatulate thoroughly to work out little lumps that will form. This gives a smooth fine powder. The krameria is simply a coloring, giving a delicate pink. Harmless.

Oil of cassia is a germicide. The cocoa butter being of an oily nature, holds the cassia longer and seems the most pleasant and is also nourishing and soothing to the gums. The soda bicarbonate neutralizes any acid formed by fermentation, and assists to prevent salivary calculus.

This makes a very agreeable dentifrice for regular use, and I have found it especially beneficial in those cases where the gums are congested at the margins, and the teeth commencing to be loosened, hardly to be classed as pyorrheal, more of the nature of subacute or chronic gingivitis. Two or three applications of calendula tincture, and the use of the powder each evening the last thing before retiring, being particular to leave what tooth powder remains about the teeth, has, after a time, restored the gums to a healthy condition and the teeth have become normally firm again.

In the June or July number of "Items of Interest," 1894, I think there is an article from the pen of an English dentist naming most of these ingredients as an "ideal tooth powder"; no proportions or quantities are there given, however.—*Items of Interest.*

ARTICLE IV.

AMALGAM PILLS.

W. ANDRE CAMPBELL, M. D. S., BROOKLYN, N. Y.

The component parts of amalgam pills in olden times, that is, my early dental days, consisted of two parts of granulated silver to one part of pure tin. And how surprising to find how varied the product might be from this simple formula. No less than three varieties are produced in the fusion alone, for if the silver is overheated, when the tin is added, a portion of it (the tin) is lost in the fuse; if the silver is overheated, an imperfect amalgamation is the result; but with a proper temperature, then the perfect product, and that is easily spoiled or changed, for if the melted mass is poured into an overheated or underheated ingot (the specific gravity of the two metals being so different), this will also cause an imperfect product. So it is difficult to get a uniform composition, and when obtained, the fillings or shavings can again be robbed of some of their good qualities by an excess or an insufficient quantity of quicksilver. Therefore, is it possible to obtain a positive and perfect amalgam, even from any of the up-to-date formulas ?

Possibly Dr. Black *may* know (manufacturers of course *do* know), and possibly the present scientific methods have overcome these difficulties. My experience and observation, however, do not warrant the assumption.

There is no doubt that there are good productions, at times, and good manipulation also from any of the formulas, for I have seen a filling which stood the test of use for thirty years, and was then in perfect condition. This, of course, must have been made from the original simple formula.

Mercurial poisoning from amalgam pills, as has been claimed, I decline to believe. The original formula required a large proportion of quicksilver to make it plastic, and always mixed in the palm of the hand, which I have done for the past thirty-five years, and have noticed no bad results to patient or myself.

In my early days of dentistry, I had an opportunity to fill for a brother dentist a superior third molar. I was about to place the pill (which was as large as a good sized pea) in position (they were always made in that form in those days and put in the cavity whole, and in a very soft mass), when I had the pleasure of seeing it fall off my fingers (it was usually carried by the finger at that time) and quietly and gently roll down his esophagus. There was no effect, either bad or good, from the voluntary dose. He is still living.

I am inclined to believe Dr, Tuthill's (physician) experience with this kind of "pill," and its bad results—mercurial poisoning—which he claims were in his teeth thirty-eight years, is a case of imperfect diagnosis. He says he had *them* removed. What could he have had removed? If the system had already absorbed *them*, and if the system was already surcharged with mercury, how could he find relief by adding more, as he says he did, by using bichlorid of mercury as a dressing? However, it may be an idiosyncrasy of his; and we will be charitable.—*Items of Interest.*

ARTICLE V.

A METHOD OF PULP CANAL FILLING.

G. W. KNIGHT, D. D. S., BROOKYN.

The subject of dead teeth from the standpoint of discussion is as old as the hills, and an apology is instinctively suggested when the matter is even mentioned. Yet it is not as threadbare as might be supposed after passing through so many hands; the question is vital to all, being as it is an every-day problem demanding an accurate solution, and I have faith to believe that there are many whom it will interest.

The history of the literature and discussion of this topic is entertaining as well as instructive, and leads to two suspicions. First, that there is more than one royal road to success; and, secondly, that many roads to failure are made so by the manner in which they are traveled. It is safe to assert that, all positive statements to the contrary notwithstanding, there are ways and materials which can be employed to reach the desired end, and not one way and one material only. It is an equally safe statement that any method and any material may become a means to disaster if employed unskilfully.

It is not the purpose of this paper to touch on the opening of the root canal; it presumes that all that has been properly attended to. Schreier method and Donaldson cleansers, if you will, but the greatest care and patience surely, and the canal cleaned, sterilized and opened to the very best of the operator's ability.

Nor is it intended to discuss the relative merits of materials which might be employed for the purpose of filling the canal. The aim is simply to present a method by which the operator can feel, when he has finished the work, that the canal is filled and filled as it should be.

There are certain qualities which the ideal canal filling should possess, and the first of these is adaptability. Time, care and labor are spent in opening the canal and getting the root into a healthy condition; it is discouraging to employ a material in the filling process which possesses the possibility of clogging the canal when half way to the apex, thereby leaving the remaining and troublesome end open to invite a return of putrefactive conditions and their resultant evils. The material should also adhere closely to the walls of the canal, sealing every crevice and as far as possible the microscopic openings of the canaliculi, thereby acting as a mechanical preventive of putrefaction by excluding the ingress and egress of air or gases to or from these tiny channels.

Secondly, compatibility. When the apical foramen is large, or when extra effort has been made to force the filling home, a slight portion of the filling may occasionally find its way through the opening into the tissue beyond. Any material would, under these conditions, act as a foreign body and be treated as such, causing inflammation. It is desirable, therefore, to use a substance which will be absorbed or become readily acceptable under such circumstances. If the substance has antiseptic properties it will be additionally valuable, continuing the sterilization of the canal if that important work has not been completely done.

Thirdly, removability. A pulpless tooth is next door neighbor to a crowned root and the ready removal of the filling, to admit the introduction of a pivot is a great convenience. Occasionally, also; it may be necessary to remove the filling to reach an abscess.

A proper combination and manipulation of oxychloride of zinc cement, low heat gutta-percha and electrozone will give a filling which will fulfill the above requirements. First wind two or three fine broaches or old Donaldson bristles with shreds of cotton and lay them on the operating table beside a mixing slab on which is placed two or three low heat gutta-percha cones, one drop of electrozone (concentracted) and the proper proportion of liquid and powder of the cement. Next, having the canal dry, incorporate the cement powder with electrozone and add sufficient of the cement liquid to make a creamy paste, which is immediately picked up by one of the cotton twisted broaches and pumped into the canal, repeating this until there is a slight indication of pain, or until you are confident that the filling has reached the apex. Follow this with one of the gutta-percha cones very slightly warmed on a canal plugger and the work is done. The combination also prevents the cement from setting hard. The pumping process insures the cement reaching the apex and the lining of the sides of the canal to which it will adhere The packing in of the low heat gutta percha compresses the cement, forcing it still more into place in every direction and also leaves a gutta-percha core to facilitate removal should it ever be necessary. The beginning of the canal should be large enough to give the broach piston proper play, while the remainder of the canal need only be enlarged sufficiently to admit the finest Donaldson cleanser.—*Items of Interest.*

ARTICLE VI.

A NEW METHOD OF MUMMIFICATION OF THE PULP.

PROFESSOR BOENNECKEN, M. D., D. D. S., PRAGUE, BOHEMIA.

The following report is a brief abstract of two original communications upon modern methods in the treatment of diseased pulps that have appeared in the "Oesterrichische Ungarische Vierteljahrs-schrift fur Zahnheilkunde," Vienna, January, 1898, and January, 1899. In these papers I have given a report of experiments made by me in the course of the last four years upon the subject of mummifying the pulp after its devitalization by arsenic. Having reached in the beginning of this year a record of a thousand successful case of acute or chronic pulpitis, all treated in the same way without removing the root portions of the pulp, I venture to give the readers of the "Dental Cosmos" a brief description of my method.

Every practitioner knows that in a great many cases of pulpitis in molars or bicuspids, mechanical difficulties will make the total extirpation of the devitalized pulp a matter of impossibility. In another great percentage of cases we cannot remove the pulp because we dare not inflict the pain upon our patient. Indeed, this little operation is very often a greater torture than the extraction of the teeth itself. I do not know whether American patients can stand a greater amount of pain in the dental chair than European ones, but I can assure you that in our country, and especially in the large capitals of our continent, the dental parlors are full of neurasthenic and hysteric patients who cannot endure the perfect removal of a devitalized molar pulp without paying for it with a few days' suffering from severe nervous prostration.

For this kind of invalids the treatment which I am going to describe seems to me almost a necessity. I may add that busy dentists, especially those colleagues who are engaged in "praxis pauperum," very often cannot find the necessary time for a careful cleaning and filling of the root-canals after the old method, that we have been taught in the college, On the other hand, a tooth with fragments of a semi-devitalized pulp left in the canals may be for a certain period of time a source of great annoyance to the bearer. Until the last trace of living pulp-tissue gets perfectly mummified, which may require a couple of months, or even years, the tooth will answer to every cold or hot drink, and will not allow a normal mastication. If, however, the pulp-tissue which has been left in the canals was already infected with bacteria, an apical abscess is certain to appear sooner or later. Therefore, for all cases when we are not either able or willing to perform the total extirpation of the pulp we need some therapeutic agent that will not only perfectly and rapidly devitalize, but also permanently sterilize the fragments of the pulp.

Miller, in his admirable text-book of operative dentistry, recommends little tablets of murmuric chlorid 0.003 gram and thymod 0.005 gram to be crushed by means of amalgam plugger in the pulp-chamber after the amputation of the crown portion of the pulp. I have tried this method in about a hundred cases, with the result that these teeth, after a short period of pericemental irritation, became perfectly healthy and quiet. The irritation lasted from two hours to three days. Afterward those molars worked like healthy teeth, and never gave any more trouble. The only objection to this method, which is excellent for clinical practice, is the greenish discoloration of the crown, therefore its use ought to be restricted to molar teeth.

For the last four years I have been experimenting in the same direction with different preparations of formaldehyd. Formaldehyd, or formalin in its aqueous solution, has two qualities which make it extremely valuable for our purpose of mummifying the devitalized pulp. It is a powerful sterilizer, and it coagulates the albumen of the living tissue. Indeed, it hardens the protoplasm so quickly that one can change the soft tissue of a pulp into the consistence of leather by half an hour's application of formalin. Therefore, it has of late been widely used for the conservation of anatomical and histological specimens.

The plan of my experiments was to sterilize and to coagulate the root portions of the pulp with farmalin; in other words, to harden the pulp like a microscopical specimen, and. as formalin produces little or no shrinking of the tissue, to change the semi-devitalized and infected stumps of the pulp into totally devitalized and aseptic root fillings. If began by washing out the pulp chamber with the concentrated solution of formaldehyd and sealing in the chamber a piece of cotton wool, saturated with forty per cent. formalin. All the patients treated in this way suffered between half an hour and ten hours from a severe burning toothache. The stage of irritation being once over, the teeth become comfortable, and patients soon forget that they ever had trouble with them. I discovered that the painful reaction of the semi devitalized pulp stumps was due to the high concentration of formalin. By gradually diminishing the strength of formalin and mixing the formaldehyd with cocain and thymol to a thick paste, I arrived at a method which I have tested now in more than a thousand cases. I now treat every case of inflammation of the pulp in molars or bicuspids, as follows :

Twenty-four to forty eight hours after the application of arsenic I remove the crown portion of the pulp (the so-called amputation of the pulp) with a large, sharp bur, using the warm water syringe for cleaning out all the *debris* of the cavity and the pulp chamber. This little operation is almost in every case quite painless. Then the rubber-dam is applied and the pulp-chamber thoroughly washed out with a ten per cent. solution of formaldehyd (one volume of the forty per cent. formalin to three volumes of water). I call this the "formol-bath" of the pulp. Then I fill the pulp-chamber with my formaldehyl paste, cover with oxyphosphate, and put in the permanent filling. The tooth is always finished in one sitting.

Two years ago I published the following formula for the formaldehyd paste :

℞—Cocain,
Thymoli, aa 1, 0;
Misce exactissime terendo.
Adde sol. formaldehydi aquos (40%), gtt. x;
Zinc oxid, 2, 0.
Fiat pasta.

But a formaldehyl paste exposed to air in an open bottle does not waste very well. The formaldehyd soon evaporates and disintegrates; besides, the paste soon loses the proper consistence—it is either too thick or too thin to be handy for dental purposes. Therefore, I gave an order to Mr. van Tongel, an eminent chemist of Prague; to prepare this paste with a very high concentration of formaldehyd, give it the proper consistence, and fill it in small tin tubes which can be hermetically closed. These tubes I gave to the depots to be sold at the usual cost of making. The large percentage of thymol is given to the paste to insure the permanent sterilization of the pulp fragments. A series of experiments upon pulps of different animals has shown that thymol penetrates the tissue of the pulp very slowly—viz., in the course of several weeks—from one end to the other, and that it retains its antiseptic power, as it seems, for an unlimited time. The formalin, with its rapid action, may soon evaporate and disappear, whereas thymol will stay and be a reliable antiseptic agent. A small piece of the paste is pressed out of tube, brought into the pulp-chamber with an amalgam plugger, and pressed gently against the root stumps of the pulp with a piece of clean cotton wool. The whole operation is done in five minutes; there is no pain inflicted on the patient, and, as far as my four years' experience goes, the tooth will give perfect rest. When the patient comes back to you the next day, or later, the tooth will not show any sensitiveness upon tapping with a steel instrument, a symptom which is nearly always observed after cleaning out the canals and filling the roots. If the inflammation of the pulp has been associated with a slight pericementitis (the pericemental irritation will disappear the day after the application of the formaldehyd paste.

After this method many thousands of cases were successfully treated last year in Germany and Austria, and I feel now so sure of success that whenever a failure in this treatment occurs in my clinic—maybe a patient comes back with pain and pericementitis—I say to my students there has been made a mistake in the diagnosis. Of course, all cases of decomposed pulp, likewise all cases of destruction of the pulp-tissue by pus-formation, have decidedly to be excluded from this treatment. In these cases the canals have to be cleaned out and filled with antiseptics.

For the treatment of septic cases I have recommended for the last two years to my students and to my German colleagues the sulfuric acid process of Dr. Callahan of Cincinnati. I consider this method the greatest progress that has ever been made in the treatment of gangrena pulpæ. After a few applications of the acid the calcific depositions, which we find in almost every case of diseased pulp blocking the root-canals, are decalcified; the canals get wide, and their sterilization has become an easy thing. Neutralization is done with bicarbonate of sodium, or, better, with peroxid of sodium. When the canals are clean, I fill them with the formaldehyd paste above described. Mix a little piece of the paste with a drop of the ten per cent. solution of formaldehyl; and fill the canal with this thin cream. The disinfecting power of the formaldehyd gas that is developing after the introduction of the paste is surpassed, according to my experience, by no other antiseptic agent. I always order the patient to come to a second sitting, though as a rule the canals are sterilized after the first treatment. Very rarely a third sitting is required.

The formaldehyd paste remains in all septic cases as a definitive filling in the canals. It seems to me necessary to fill the roots in septic cases with a soft paste that will never get hard, so that if the tooth should give trouble later on you may any moment enter the canals again with your nerve instrument. And for this purpose the formaldehyd paste seems to be an ideal material.—*Dental Cosmos.*

ARTICLE VII.

REFLEX DENTAL PAIN.

S. F. HEVERLY, D. D. S., CASCADE, IOWA.

Miss L. Teacher, aged about twenty-three, came to my office Saturday evening, June 10, complaining of severe pain in four upper teeth, viz., left lateral incisor, cuspid, and first and second bicuspids, which, she said, had appeared about two days previously, and had been so severe as to not only keep her awake at night, but to compel her to cry from the pain.

I immediately suspected initial stages of alveolar abscess, and sought the history of the fillings which she had in incisor and both bicuspids. She admitted that the incisor had been very sensitive when filled several years before; did not remember tnat any of them had had root fillings. All four felt longer than usual, and were so sore that she could not use them. On percussion I found that they responded to the test for pericementitis—but all were equally sensitive—the cuspid which was apparently sound, was as sore as any.

I was not satisfied that I knew the exact cause, so I painted the gums thoroughly with creosote and iodine, prescribed phenacetine and morphine sulphate in doses of five grains of the former to one-half grain of the latter to be taken every three hours until better, and sent her home with the request to call next morning. Sunday morning she appeared and reported no relief; had not been able to sleep; pain continued as before. I made a thorough examination, but could discover no particular change, but supposed the chief offender to be the incisor which had two gold fillings—mesial and distal—so I proceeded to open into the pulp chamber. But when I had passed the enamel, the tooth was so sensitive that I could go no further.

I stopped and directed my attention to a canker sore on the mucous membrane of the lip, just opposite the cuspid tooth, which was very angry looking and had caused the lip to swell sufficiently to be noticeable. I cauterized it thoroughly with nitric acid, full strength, sealed opening I had made in lateral; and sent her away with instructions to call next morning.

Monday morning she appeared and reported that the pain had continued all day and night until about two o'clock a. m., then had ceased and she had been free from pain ever since, but the bicuspids were still sore. Examination showed the swelling gone and sore much reduced. I gave it another treatment of HNO_3, applied capsicum pad over region of roots of bicuspids and dismissed patient with instructions to call after school, if the pain continued. She did not return, and I concluded that the canker sore was the cause of all the trouble; that the pain in teeth was reflex pain, and that the nitric acid had produced a cure.—*Items of Interest.*

ARTICLE VIII.

THE DECIDUOUS TEETH—THEIR USES AND DISEASES.

DR. J. W. JUETT. D. D. S., EMINEOCE, KY.

Read before the Kentucky State Dental Association at Mammoth Cave, May 16, 1899.

I believe the care of children's teeth gives the dentist more trouble and causes him more anxiety than all the rest of his practice with one exception. What is that, say you ? If he be a country dentist I would say, making artificial dentures.

I am inclined to think the trouble would be somewhat mitigated and the anxiety reduced if parents were taught the importance of the deciduous teeth.

In all nature I know of nothing more wonderful than the growth and development of the deciduous teeth, their absorption and replacement by the permanent teeth. If you have given the subject much thought or study you know how very important it is to preserve the deciduous teeth and not neglect them because the child will lose them. First, the roots of the deciduous teeth will not be absorbed if the pulp be dead; second, the permanent teeth will not be nourished properly if absorption does not take place in the deciduous teeth; fourth, if the deciduous teeth are left in the mouth with dead pulps they cause the permanent teeth to deflect in or out as the case may be, forming an irregularity; fourth, if the deciduous teeth be removed you leave a cicatrix, which will give you the same defect (probably) that would occur if they were left in the mouth; fifth, the fact of the child's having a mouth full of decayed teeth undoubtedly causes an unhealthy condition there, and not being able to masticate the food properly would give rise to unhealthy conditions of the stomach and a general disarrangement of the alimentary canal; sixth, when the deciduous teeth are well taken care of the permanent teeth in ninety-nine cases in a hundred will be well formed and seldom irregular.

Now, I do not deem it necessary to take up the several divisions of the subject and discuss them, because they have been brought before your minds and you are well acquainted with the facts as stated. The question is, how will we get parents to know the importance and acquaint them with the facts concerning the deciduous teeth? So many mothers bring their children to us with the sixth-year molar giving pain, and when we tell them it is a permanent tooth that is giving the trouble they are very much surprised and generally exclaim, "Well, I thought she would 'shed' that tooth." (Yes, like a snake sheds his skin, maybe yearly!), and if we try to explain the situation to the mother it is hard for her to understand why the tooth must not come out. Perhaps the child is too young to have the nerve removed and we are compelled to remove the tooth. In nine cases out of ten we make an enemy of the child and are fortunate indeed if we can regain its confidence for future operations. This is only one of the many problems that present themselves to us day by day.

Several ways suggest themselves to my mind as to how we can best inform parents concerning this subject.

First, I would say the physician could do much if he were trained, but, however, very few of our medical friends could tell a temporary tooth from a permanent one. I would, therefore, suggest a chair be added to the curriculum of the medical schools and the M D. be required to pass an examination on the formation and care of the teeth so that he could intelligently aid his brother dentist instead of oftentimes hindering him. I have often seen good teeth sacrified because the patient would first visit a physician instead of consulting a dentist.

Then, too, the dentist with such literature as can now be procured should endeavor to educate as much as he can through his patients, and I think he should be progressive enough to reach the teacher and pupils in our public schools with a series of lessons on the care of the teeth. You will be surprised to find how readily the trustees and teachers will give you their assistance.

I present you the models of the mouth of a child eight years of age. I have had the care of her teeth since she was three, putting in the first fillings at that age. She has never had an ache or a pain with her teeth and every tooth that has decayed has been filled. I found some of her teeth quite sensitive, and when I could not excavate sufficiently I would place a small portion of silver nitrate in the tooth and after a few days excavate and fill. You will find this a very great aid in the treatment of children's teeth. I realize that it sometimes tries one's patience and endurance, but I think the time well spent, and it is remarkable how much you can do for the child if you have gained its confidence. I realize, hewever, that some dentists have very little patience of this kind, and I would not advise them to undertake very much.—*Indiana Dental Journal.*

Article IX.

LOCAL ANESTHETICS.

J. S. CASSIDY, D. D. S., COVINGTON, KY.

The introduction of local anesthetics to dental practice has probably not been an unmixed blessing. It has certainly enabled the unmitigated liar, with some show of truth, to add largely to his armament of deception, and has impressed the innocent patient, before the operation with the confiding belief that painless dentistry is an accomplished fact. It leads, therefore, to so-called quackery and to expectations on the part of the public that can only be partially fulfilled, and in some cases to possible damage suits for breach of contract.

With the incoming of cocain your essayist did his share in extolling the virtues of this much-abused drug, and at one time was considered by certain members of this society as little fietter than a horse thief, for stating that it was able to produce anesthetic efforts on dentin. After an experience with it, and by consultation with friends in regard to it, I cannot go back on the early position then taken, except to emphasize more fully the dangerous, as well as the beneficial qualities of this famous alkaloid.

The good things of this world, useful and beautiful, are all woefully abused by the wicked, ignorant and incompetent; whether we apply this aphorism to therapeutics, religion or politics, or the various aspects in which man is presented in his efforts to reach the objects of his unworthy desires, its truth is evident.

Local anesthesia is a good thing, provided it can be induced without loss of precious time and with comparative safety; but such approach to perfection in special therapeutics is not as yet attained, and probably never will be, and in consequence, those of us who practice in this direction should not only select the best means to reach success, but also be prepared, as far as possible, to counteract, by previous and subsequent treatment, any concomitant evil effects that may occur.

The present writer is personally not much interested in extracting teeth. It is proper to observe, however, that many of those engaged largely in that kind of practice prefer for injection, B. Eucain Hydrochlorid. It is less toxic than cocain preparations, and unlike the latter, causes local hyperæmia, supplying thus to the part an extra amount of defensive proteids, which probably prevent the immediate systemic poiaonous influence and excessive limited inflammation noticed so often as sequela to the injection of drugs which cause anæmia.

Inasmuch, however, as certain hydrochlorid is still used most freely in this way, might it not be good practice to administer some preantidote as a precaution against possible intoxication. Dr. Lennox Curtis says that by giving "volasem" to his patients before injecting cocain, all symptoms of bad effect from the latter are prevented. Volaseum is a propriety affair, the active principle of which is understood to be physostigma venenosum, the physiclogical antidote to belladonna, and as belladonna itself is one of the antidotes employed in cocain poisoning, the use of volasem in the way advised by Dr. Curtis might be regarded as in accordance with strictly scientific contrariety.

"Orthoform" is a new local anesthetic intended mainly for use in burns and other painful local affections. It may be applied safely and effectively in pyorrhea pockets, etc., before operating. We use it empirically, not knowing exactly what it is, except that it probably belongs to the benzene ring, by lateral chains, which, in therapeutics, means nothing much, for of the thousands of both natural and artificially manufactured organic compounds, all may be said to be derived from either methane (CH_4), or benzene (C_6H_6). Nevertheless, Dr. Prinz, in a late number of the "Ohio Journal," recommends orthoform the alkaloid, and orthoform hydrochlorid, the salt, in equal proportions dissolved in water, as a perfectly safe injection for painless removal of teeth.

It is hoped that in discussing this paper, the majority of this society will decide as to the value of "vapocain" in reducing sensibility of dentin. My own experience with it has not been altogether satisfactory. Theoretically, the ether should drive out the moisture from the tubuli and deposit the cocain salt therein, to be redissolved by the reappearing natural fluid of the tooth, and so secure effective anesthesia. Sometimes this theory agrees clinically in my office, but oftener otherwise, and I ask you to kindly tell your experience with it.

"Potossocain" is another preparation of cocain intended for a dentinal obtundant, which, although its alkalinity may be in its favor; is possessed also of the elements of uncertainty. Indeed, must we acknowledge that there has been really but slight improvement in this respect, aside from cataphoresis, over the early method of placing cocain hydrochlorid crystals in the tender cavity and allowing them to dissolve therein, under pressure? If this experience is yours, more than less, I shall go back to first principles until something better comes along.

It is high time that we arrive at some definite conclusion as to whether the medicines we work with, under given circumstances, are possessed of the power with which we are too often disposed to credit them, in either their physiological, chemical or dynamic influence.—*Indiana Dental Journal.*

ARTICLE X.

OPEN FACE CROWN VS. CONTOUR FILLING OR RICHMOND CROWN FOR INCISORS.

H. T. KING, D. D. S., FREMONT, NEBRASKA.

How would I restore the tooth a little too far gone to fill, and the loss of structure does not necessitate a crown? In my title, I have designated this as an open face crown; it is hardly that, for as shell crowns are usually made, as little gold and as much cement as possible is used, while in this case, as much gold as is necessary to make contour, and as little cement as possible is used. It is hardly an inlay, either, although the inlay principle is used in making it. I proceed as follows:

First, trim away all enamel which is frail, but leave much more of the labial plate than would be admissible for a foil filling. With disks, remove all the enamel from the proximal portion of the cervix on both sides, giving a flat, highly polished surface. Remove a portion, at least, of enamel from lingual aspect. Shorten tooth a very little, beveling from both sides. Cut out decay, and if this leaves the cavities so deep or irregular that impression can not be taken, fill the deep parts with gutta percha. The work can all be nicely done in the mouth, but I find that time is saved and the patient relieved, by taking a plaster impression and making a fusible metal cast. A perfect reproduction of the tooth in metal can be quickly obtained by slipping into the proximal space on either side, a piece of cardboard just thick enough to fit, letting it press the gum back a little from the interproximal space.

If I wish a pin or dowel to extend into the pulp canal or deep portion of cavity for anchorage, a piece of round wood toothpick is put in place, and comes away with cardboard in impression. When the impression is fitted with Melotte's metal, I have a more or less perfect model, to which my gold is approximately fitted.

Take a generous piece of 24k. gold, 32 to 36 gauge, and by pressing, burnishing and trimming over all the lingual and proximating surfaces of tooth, the gold on the proximal sides cut off just even with cutting edges, that covering the lingual side extending so as to fold over and fit to the shortened occlusal surface.

My way is to first fit to one proximal surface, forcing gold into more depressed portion, with a piece of erasing rubber under instrument. Slip from model and flow enough 22 k. solder to stiffen it. Replace on model, drive piece of soft wood between adjoining tooth and gold that have been melted on, thus holding firmly in place while I burnish and fit to the whole lingual surface; remove and flow on gold. Replace, fasten in place, and fit gold to other cavity and proximal surface. The gold being thin and pure, all this can be quickly done.

The solder is to be laid on in small pieces, a little at a time, and heat enough given to barely melt it, for, until it is fitted to tooth in mouth, no solder is to be allowed to flow onto the part that it is to be fitted over end cf tooth and edges of labial plate of enamel. This is important, for upon the close adaptation of gold to tooth at exposed point depends the good appearance of the finished work, and, in a great measure, its durability as well. I have an idea that the best way to add piece by piece of solder is by the use of the mouth blowpipe. Possibly that is because I enjoy the use of that instrument, and have become somewhat of an expert from having done all my crown and bridge work in that way. Others may get as good results from a mechanical blowpipe and bellows, but I have no use for them, except to melt a large batch of gold.

Our piece of work is now fitted to the model and made rigid enough to handle without fear of bending. We remove from model to tooth in the mouth and burnish to the enamel. Remove very carefully, paint the inside with whiting or finely-ground asbestos and invest; sufficient gold is then added to make necessary contour. You are all workers in gold and have your own way of doing this, so I need not dwell upon it. A perfect polish out of the mouth is to be given to all parts except the labial face; a rough polish will do there, as this part is to receive its final polish in the mouth after cement has hardened.

If the work has been neatly done, cement will not show. and you have, to all appearance, a contour gold filling with less gold showing, however, than if built up and with an occlusal surface made of hard gold, that may with safety be brought to as thin à cutting edge as desired.

I have said nothing of anchorage, and some may be asking the question, "Will it stay ?" The tooth having gole on all sides except labial, no ordinary force can dislodge it when applied in any direction, unless down or in —the two directions not necessary to particularly guard on the upper jaw. As a rule, I depend upon the fitting of gold into the two proximal cavities and turning over the beveled occlusal edge, or, if not necessary to turn the end and have gold show, fit into groove cut through occlusal surface. This is but slight anchorage, but sufficient to prevent the crown from tipping in, unless it first comes down a little.

The method I present for the restoration to form and usefulness of badly decayed incisor teeth is not universal in its application, but in the last six years I have found many places where it seemed to me the best method, and it has given great satisfaction, both to myself and patient. I have used it oftenest on frail lateral incisors of the upper jaw, but in a few cases have found it just the thing for lower incisors so badly gone that I have doubted my ability to restore with gold fillings, and did not consider them good subjects for porcelain crowns. Have also had some pleasing results from supplying the principle to bicuspids, when I have found the buccal enamel and cusp in good condition, yet the tooth demanding a crown of some kind. You can give such a tooth the appearance of having a contour filling, with but little more work than making a shell crown, and the finished work will be much less conspicuous. For a bicuspid, a good strong pin should extend from gold on occlusal surface well into pulp canal, as strong anchorage is demanded.—"Review."

ARTICLE XI.

AN UNUSUAL EXPERIENCE IN PRACTICE.

I. B. HOWELL, D. D. S., PADUCAH, KY.

It is difficult to define an unusual experience in practice, or to select an occurrence in one's own experience that may not have occurred frequantly in the experience of others.

I have selected a case in practice, however, which stands isolated in my own short experience, and yet one that has given me considerable thought, not to say some little anxiety, and which possibly has not occurred at all in the experience of many who are here present. On the morning of June 1st, a man about twenty-five years old came into my office suffering intensely with pain at the inside angle of the lower jaw on the left side and radiating over that entire side of the face and neck.

There was considerable inflammation and swelling and extreme sensitiveness of the parts, and a degree of tonic spasms of the muscles of that side that no reasonable amount of force could overcome. My diagnosis was, a belated, developing third molar, trying to make its way into a space already impinged upon by the second molar, and hence inadequate to the reception of the third molar, with possibly adjoining decayed teeth, periostitis, mastitis and an element of reflex muscular spasm.

Calling a physician near by to administer chloroform, I had the patient, with his consent, anesthetized, and then, partially prying open the mouth, I found the second molar badly decayed and the third molar, or wisdom tooth, tightly wedged in and occupying a horizontal position between the second molar and vertical ramus of the jaw.

Believing the case to be one that demanded immediate relief, the third molar being difficult if not impossible to get at without an unwarranted degree of violence to inflamed tissues, and the second molar, being already decayed and practically worthless, I extracted the latter intending to then extract the misplaced third molar also. But just at this juncture the patient passed from under the influence of chloroform and stubbornly rebelled against any further inhalation of the anesthetic or interference with his mouth whatever.

Thinking that perhaps enough had been done to relieve the intense pain and to allow the inflammation to subside, I ceased all efforts at further interference and instructed the patient to call later for additional treatment.

Now, perhaps there is nothing unusual in all of this. Were I to stop just here this paper would certainly amount to little else than a blank cartridge.

But the unusual part of the experience to me, and perhaps would have been to most of you, was that the patient, instead of calling again for further treatment, instituted a suit in court for $1,000 on the plea that I had extracted the wrong tooth.

This proceeding not only made the experience unusual to me but interesting as well. It made necessary the cultivation of the acquaintance of a gentleman in another profession —a lawyer.

It was for the purpose of carrying me into the presence of a judge and jury and to have men wholly unacquainted with the requirements and duties of my profession pass upon the merits or demerits of my practice in an emergency.

It was to make me a representative before the court of all the members of my profession in this country with all their vast interest, and to establish a precedent in medico-legal jurisprudence that would tend to make dentists mere mechanical imitators of what some one else had already done and published on the one hand, or intelligent, independent operators in oral surgery on the other hand.

Hence, this case of unusual experience in the practice affects the rights and involves the interests of us all.

And I am proud to be able to say that a mere knowledge of its existence has aroused the professional patriotism of the rank and file, as well as the leading lights of our honorable profession, wherever such facts have been made known.

While I will not say that I believe I could call to my aid in the contest twelve legions of dentists, I will say that I believe I could call to my aid every honest dentist in these United States, and I believe further. that most of them are honest.

It may be of interest to you to know that the lawsuit has never been tried. The plantiff put it off from court to court, seeking in the meantime a compromise on the basis of a small money consideration from me, until recently he took pneumonia and died, and his widow then sent to know if I would pay her a small consideration to withdraw the suit.

I feel and have all the time felt that to compromise this matter by the payment of one single penny was to compromise myself and my profession, and hence it has been and is now my motto to fight it out from Cape Cod to Kalamazoo on the line of honorable defense, let it cost what it may.—*Indiana Dental Journal.*

ARTICEL XII

A CASE OF A TOOTH IMPACTED IN THE LEFT BRONCHUS: GANGRENE OF THE LEFT LUNG: DEATH.

A women, aged 26, was admitted to the Victoria Hospital, Burnley, on December 18th, and died on December 30th, 1897. She stated, on admission, that four days previously she was given gas for the purpose of having a tooth extracted. At the critical moment she appears to have taken a deep breath, the result being that the tooth, which must have escaped from the forceps, was inhaled into the air passages. Thereafter extreme cyanosis occurred, and she had a feeling of tightness in the throat, with dyspnea, and a hard dry cough, aggravated by speaking or change of position. She had also a vague feeling of something being fixed inside the chest, but could not indicate the position. When I saw her she was lying on her back, with livid lips, and coughing in frequent paroxysms, but without expectoration. The coughing was much aggravated by attempts to speak, and by change of posture. The left side of the chest scarcely moved at all on respiration. There were no breath sounds audible over the left side of the chest, with the exception of tubular breathing at the left apex, accompanied by small moist *rules*, and this was indistinct posteriorly. On the outside of the left nipple there was a small area over which a friction rub was audible. On the left side, from the level of nipple down to an inch from the umbilicus and backwards as far as the mid-axillary line, there was a well-marked area of hyperesthesia, which corresponded roughly to the distribution of the sixth, seventh and eighth dorsal spinal roots. The breath sounds were harsh on the right side but otherwise normal. The pulse and respiration-rates were much quickened. During the next few days there was little alteration in the patient's condition, but the temperature assumed the hectic type. On December 27th, thirteen days after the accident, there were marked signs of gangrene of the left lung. The breath was offensive, and there was expectoration of a brown and foul-smelling sputum. The lower cervical glands on the left side were enlarged, and there was a well-marked friction rub in the left axilla. Her condition became gradually worse until death occurred on December 30th. At the necropsy on December 31st, 1897, I explored the trachea up to the larynx, but no foreign body was found there. All over the left pleural cavity there were numerous recent adhesions, and on separating these some grumous fluid came away from the lung. The heart was flabby and rather smaller than usual, and its right side was dilated. On cutting open the left bronchas the missing tooth was found. It was tightly wedged in the bronchus, its point being downwards and the crown upwards, so that it had apparently acted as a "ball valve." It had almost ulcerated through the left bronchus, which above the situation of the tooth was congested and full of grumous fluid. On following the left bronchus into the lung there was found an irregular passage full of a brown smelling fluid. The whole of the left lung was gangrenous and creptitating, and on squeezing the lung substance there exuded a fluid of the character described. The bronchial glands were enlarged, and there was also an enlarged gland at the root of the neck on the left side. Above the impacted tooth no bronchiole was given off, so that there must have been entire obstruction. The right lung was congested and edematous, showed commencing consolidation at the base. There were two cavities in the left lower jaw, and into the hinder one the tooth, which was carious, fitted exactly, its direction being forwards and inwards. This case seems to illustrate the effects of obstruction to a bronchus, as Dr. Sevestre has recently pointed out in the *British Medical Journal*, the early stage being collapse of the lung, and the later, inflammation, leading sometimes to the entire disorganization and gangrene of the lung. The tooth did not appear to have been tightly wedged in at first when the patient was seen, but seemed to have become so owing to the incessant attempts to expel the foreign body, and with each attempt the conditions must have been aggravated by the suction in during inspiration. The gangrene would be excited both by the retention of secretion, and by the introduction of septic material from the tooth.—*James S. Warrack, M. A., M. D., Demonstrator of Physiology in the University of Aberdeen, in British Medical Journal, Feb. 18th, 1899.*

ARTICLE XIII.

REST AND SLEEP.

J. CAM ANDERSON, M. D., HALSTON BRIDGE, VA.

This is a fast age as compared with a half or even a quarter of a century ago. Fast, reckless living. In order to keep up in the busy whirl of life, many exert themselves beyon their strength, and many even fall by the wayside, and give up the struggle; many bring on disease and have to drag out a miserable existence, and some few, yes, a great many, as a consequence, "shufflle off this mortal coil" by suicide. There are many routes, and each selects his peculiar way.

Fast living in a fast age. Is there no remedy to help poor, unfortunate victims of the "pride of life?" Yes, largely, there is, if people would only stop and think and apply the remedy. What is it? Brain rest and sleep.

The tendency of the age is more now, than at any other time in the history of this country, to mental overwork and strain, and exhaustion of physical and brain force. "The errors and indiscretions of youth are drafts upon old age, if one should live so long, payable forty years after date, with compound interest." This is a fearful thought. Yet, how true. How true it is, more or less, of every individual.

The circumstances surrounding active professional life, to-day, are such that the nervous system must be of the most perfect character to resist and stand the immense strain made upon it.

When you think of the influences brought to bear upon one in active city business, it is a wonder and a source of surprise that there are not even more cases of insanity from brain exhaustion, leading on to the common fatality, suicide. What will tend to prevent? Brain rest and sleep.

The demand of the times is for a greater amount of brain rest, longer periods from business cares and worries, confusion, excitement, anxiety and responsibilities. We are a nation of dyspeptics, from fast living, over eating, lack of brain rest and sleep.

Working and worrying six days of the week, and oftentimes Sunday, too, all day long, nearly all night, day in and day out. We stand it for awhile, but what is the result? Disease, insanity and death; premature, sad, but true.

It is a scientific fact that one third of our time should be spent in sleep; quiet, restful, natural, refreshing sleep. But, instead of this, how is it? How is it with you, my reader? Think about it and see if you are just to your own self in this particular.

Many men, and especially literary men, writers, preachers, lawyers and doctors, all, more or less, starve the brain incessantly in this matter, until they bring on a partial, and sometimes an incurable insomnia. An irritable man, cross, pettish, peevish, disagreeable and easy "fly off the handle" and get mad as a "wet hen" on the slightest provocation, can nearly always be classed as one who does not get or take sleep enough. A self-composed, placid, quiet, thoughtful, even tempered, genial-natured man, may be known as one who not only insits upon having his full quota of sleep, but one who takes it—eight good, solid hourse of sleep and rest.

From a medical standpoint, dear reader, let me impress upon you that sleep, natural sleep, is the best and only natural tonic to the nervous system, known, and all other so-called tonics, are stimulants. Nature's tonics are exercise, pure air and water, sunshine and sleep, all else are stimulants, and oftentimes harmful, instead of being conducive to health.

Brain rest and sleep, freedom from care, anxiety and responsibility, pure air and water, health exercise, regulated diet, good digestion—and this generally brings it—and full cight hours of sleep, would lengthen the life of the present generation from ten to thirty years.

Go slow and sure, is a good rule, but the age won't let you. Here we go, pell-mell, helter-skelter, on, on, in the mad rush, headlong, heels overhead. What is the result? Sooner or later (and generally sooner), a wreck, body and mind, and probably soul, avarice, love of money. Stop and think. Apply the scripture: "What doth it profit a man if he gain the whole world, and lose his own soul?" or "What shall a man give in exchange for his soul?"

'Tis a good plan for busy brain workers to rest in daytime. Take time to rest and let the brain recuperate. The after-dinner nap, ten or twenty minutes, is good. This is a fact, demonstrated by experience and observation. Rest the body and mind. Give Nature a chance and she will cure you. The physician only aids Nature. When you are sick, so study and give Nature her way and you will get there with both feet and right side up with care. Especially valuable is this momentary resting down on the parlor sofa or out in the wood-shed on the ground, to those whose appetites and digestion must be encouraged, and who are in only a small degree troubled with insomnia, or sleeplessness. Doctor, when you get this class of patients, quiet your patient's nervous system, artificially, naturally, or by imagination, and get sleep, restful sleep. Your patient, when all else is favorable, ten to one, will get well.

REST AND SLEEP.

The person, or the busy-brain worker who will habitually rest in day time, this is outside of eight hours (good long sixty minutes to the hour) at night, a few minutes, when tired, or worried, will stand his work better and longer, and suffer less, when forced to lose some of the regular hours to sleep. There are some men who have stood terrible strain on the nervous system, and an enormous amount of work, with but little sleep, but all suffered more or less, by it. Some, it is believed, have the power to rest certain portions of the brain, while other parts of brain are in active service. No doubt this is true; but the fact is applicable, however, to a limited few. The vast majority need, and must have an abundance of good old sleep, and the hours spent in sleep in these cases of brain-workers will be more than added to their term of years. As the fellow said, who was slightly intoxicated: "Hurrah, —boys, whooray—hic—I say, hoor—ray, hic—I say—hic hurrah for old Christmas—old Crismus." I say, hurrah for old sleep, good old, healthy, warm sleep; without it we would all soon be dead, and many are slowly dying for the want of it, and solely because, in this fast age, they just won't take the time to take it.

In conclusion, dear reader, let me say, go slow, take time for all things. Take time to think, to eat, to rest, to sleep, and don't rush along in your wild career after this world's goods. Go slow, take your time, "before the silver cord be loosened, or the golden bowl be broken." But be ready when the summons comes, "For ye know not the day nor the hour wherein the Son of man cometh." But work, and work now, and also rest, remembering "the night cometh when no man can work." And at last, when it is ours, in the very nature of things, to lie down and die, let us join in with the immortal Jackson, as he lay dying of wounds in defense of his country, his last memorable words, "Let us pass over the river, and rest under the shade of the trees." Rest, rest, sweet rest.—*Medical Brief.*

ARTICLE XIV.

THE MARVELS OF SURGERY.

The feats of modern surgeons are indeed truly marvelous and wonderful. There is nothing they will not attempt, to save life or render it easier for the sufferer. The defects of nature, as well as the results of accidents, are set right, says the *St. Louis Globe-Democrat.* A girl of eight years, though of normal physique, had no inteligence. Her parents had noticed this from her first year, and, though everything had been done for her in the way of education, she did not know the letters of the alphabet, nor could she talk intelligently. A surgeon, who was consulted, gave as his opinion that the brain had ceased to develop, owing to the premature coalesence of the bones of the skull. He removed several small pieces of bones from the top of the head, and by thus relieving the pressure on the brain gave it room to expand. Within twenty-four hours of the operation its effects were seen. The child cried for its parents, took notice of everything, and within eight days could talk well and amuse herself intelligently. In cases of injury to the skull the pieces of crushed-in bone are removed and the vacant spaces covered by silver plates

The modern surgeon, indeed, can replace any part of the human body which may be injured, and rig up an entirely new set of limbs. A housemaid in a hotel was struck in the face by a descending lift and her nose severely injured. Attempts to patch up the damaged organ failed, and it was determined to make a new nose. A black-bird was killed, and before its body was cold its breastbone was fixed to the woman's face, and what remained of the old skin was drawn over it. The strange substitute knitted itself to the face, the operation being a complete success.

The operation of rhinoplasty is a very common one at Heidelberg, as the students there have an ugly habit of slashing each other's noses in their famous duels. A flap of skin is almost detached from the forehead and brought down over the nose which has been almost destroyed. The skin is then stitched down on either side of the nose, and in time becomes grafted thereto, Skin-grafting, indeed, is quite common in cases of severe burns. Small strips of skin are taken from the untouched parts and cut into small pieces and distributed over the raw surface. In time they take root and grow and spread until they completely cover the place. The skin of frogs, recently killed for the purpose, is frequently used where human cuticle cannot be conveniently obtained.

A month or two ago a doctor was called in to attend a boy whose ear had been completely bitten off by a vicious horse. The surgeon determined to try and replace the ear, as failure to do so could not result in a worse deformity. The missing ear was duly found and handed to the doctor, who was then engaged in bathing the severed part in warm water. He had neither instruments nor dressings with him, and as the half hour's delay to obtain them would have been fatal to success, he stitched the ear in its place again with a common needle and thread. This was followed by antiseptic treatment, and in six weeks the ear had become reunited to the head again and completely healed, leaving no scars. Even had this been a failure, an aural appendage, made of waxy composition and an exact facsmile of the other ear, could have been made and fixed. In some cases it has been necessary to remove the tongue, but by raising the floor of the mouth and thus in some way filling the place of the missing organ the patient has been enabled to speak almost perfectly.

The fitting of glass eyes is well known and the complete destruction of the jawbone has no terrors for the modern surgeon. The crushed bone is removed and a piece of silver or aluminum, the exact shape of the lost jaw, fitted in its place. After this has become firmly fixed, teeth can be fitted to it. If a man's throat is defective the operation of trachetomy—the insertion of a silver tube in wind-pipe with an orifice opening to the throat—provides him with a new breathing apparatus. Artificial legs and arms are now so perfect that with them a man can walk, skate and even cycle. There is a story also of a man who, injuring his spine in a railway accident, was fitted with a steel casing for his backbone, and so enabled to walk and ride.

Bones destroyed by accident or decayed by disease are placed by others taken from animals or amputated limbs. A bone in a man's foot was attacked by caries, which gradually ate the bone away. A lamb's shank was procured, the bone cleaned, boiled in carbolic acid, pounded into a powder and made into a paste. The foot was opened and all the decayed parts of the bone scraped away, simply leaving a hollow shell. This was packed with the paste of the lamb's shank and the wound stiched up. It speedily healed and the free use of the foot was soon recovered.

It was during the attack on Santa Cruz in 1779 that Nelson lost his arm. He was shot through the right elbow, and after binding it up with a handkerchief, he continued to direct the fighting. When the battle was over Nelson was examined by the surgeon, who decided amputation was necessary. The sea was rough, the cockpit badly lighted, and chloroform, of course, unknown. In tying up the separated arteries the surgeon accidentally bound up the median nerve also. This "unlucky circumstance," as Nelson called it, was productive of intense suffering to the gallant admiral, but the foremost surgeons in England could not devise any treatment to relieve him. To a modern surgeon the course would be straightforward and simple. The wound would be opened and the nerve released from the silk ligature.

Where nerves have been accidently cut during an operation or by glass, they have been successfully joined together again. An artisan, falling from a height, severely hurt his right arm.

It was operated upon, and though specifically successful, the arm wasted and was quite useless, preventing the man from following his trade. It was thought that a nerve had been severed either by the surgeon during the operation or torn in the fall. The arm was opened, and this was found to be the case. A rabbit was procured rendered unconscious and the two sciatic nerves extracted and stitched to the ends of the severed nerve in the man's arm. Within a month the man had recovered the full use of his arm, which also regained its normal size and appearance, and he was soon able to follow his trade again.

Even to the heart itself has been applied the ordinary treatment of wounds. A patient was brought to a hospital, stabbed to the heart. The surgeon laid bare the heart, and finding the sight of the wound on the right side, calmly stiched it up. The heart beat most violently during this operation, but afterward quieted down and the patient recovered from what has usually been regarded as a fatal wound.

Though these performances sound marvelous to modern ears, the civilization of prehistoric times furnishes instances quite as remarkable. The operation of trephining —the cutting out of a piece of the skull which has been crushed in and replacing it by a silver or gold plate— which is one of the most delicate known to modern surgery, was performed by the ancient Incas of Mexico and

Peru. In the Smithsonian Institute there are nineteen skulls of prehistoric date which bear traces of this operation having been performed on them.

Monthly Summary.

A Mouthful of Teeth.—To go to bed one night and wake up the next morning with an almost complete extra set of teeth in the mouth is an experience not vouchsafed to many persons. Such a case, however, has been for some time engaging the attention of the officials of one of the London hospitals. The patient is a boy of seventeen years of age, who works in an office in the center of the city. In appearance he is no different from the hundreds of other youths who work about him, but, unlike them, he is an object of peculiar interest to over a hundred doctors and embryo dental surgeons. His story is a peculiar one, and were it not backed up by substantial proof, would be dismissed as widely imaginative.

Some little time ago he began to be affected with acute toothache, but as all his teeth were apparently sound, no local cause could be found by his parents or friends. Being too poor to secure medical attention, he was forced to bear his pain with what fortitude he coulk.

Finally, his gums began to swell on the outer side, and these grew worse until one morning he awoke to find the soreness and pain gone, and that he had an almost duplicate set of teeth growing on the outside of both the top and bottom side of the natural ones. At first this did not interfere with him but later it was found that his speech was beginning to get imperfect. An examination revealed the fact that the new teeth were growing to an abnormal size, while in proportion as they increased, his physical strength decreased.

He was then taken to the hospital, where after careful watching as an out-patient, it was decided to extract a number of the teeth. This was done, but almost as fast as they were taken out new ones grew in other places, until almost the entire roof of the patient's mouth had been taken up by this peculiar ailment, and recently it has been noticed that the growth of further teeth has been stopped. Whether this condition will be permanent is a mooted question time alone will answer, but, meanwhile, the extraction of his teeth has ceased.

The case is remarkable in medical annals, and is set down as a peculiar form of ossification. It is supposed to have a hereditary bearing, the lads' grandfather being described as a peculiarly "double jointed" man of unusual strength. A load of six hundred weight is reputed to be of little weight to him. —Pearson's.

PAINLESS EXTIRPATION OF LIVE PULPS WITHOUT CATAPHORESIS.—With the increasing tendency to the removal of all pulps that seem likely to die of themselves within a comparatively short time, there comes a demand for some practical and reliable method by which this operation can be performed without pain and without injuring the important pericemental membrane. Devitalization by means of arsenical compounds has proven to be a very unsafe method, to say the least, permanent injury to the pericementum often resulting. We naturally turn to cocain for a solution of the problem, and applied cataphoretically the great obstacle to its use, the impenetrability of dentine, is overcome. The use of cataphoresis is, however, attended by many difficulties, and it is safe to assume that owing to these difficulties there are comparatively few dentists using the method to-day. Partial devitalization with arsenic and the removal of the greater portion of the pulp with crystals of cocain or a strong solution is usually painless, leaves the pericementum intact and presents so few difficulties as to recommend itself over cataphoresis in ordinary practices. It is often desirable, however, to remove the pulp without the delay necessary in the use of arsenic, and in cases of this kind I have used a solution of cocainhydrochloride in alcohol and ether. This solution either owing to an increased capillarity over the fluid in the dentinal tubuli or some other cause, obtunds thin layers of the dentine so that they may be removed or drilled through, applying the solution as soon as the slightest sensation appears, until the pulp is reached without pain. After gaining access to the pulp a few cocain crystals dissolved in the blood that follows puncture, and carefully pumped into the canal with a broach obtunds the remaining fibres. Either of these methods is extremely simple, safe, and requires little time.—P. M. Williams, D. D. S.—"Dominion Dental Journal."

A LABORATORY HINT.—In preparing a full upper or under denture for investment in the vulcanizing flask, and when the set is finally waxed up, take a piece of waxed floss silk and, commencing at the condyle, lay it closely on where the wax terminates on the top, or, if an under set, at the bottom of the rim. Carry the wax thread entirely around the rim and bring the other end of the thread back over the other condyle.

The set can then be invested on the under side of the flask, and the plaster allowed to flow up so as to cover the silk, which is now around the set at the line where the division is to be made between the two parts of the mold.

When the plaster has stiffened just a trifle, place the thumb of the left hand in the center of the set and the fingers on the bottom of the flask and invert it. Then taking the silk by one of the ends, and drawing it firmly but gently taut, pull it away from the set, keeping the silk touching the edge of the flask.

The silk can be drawn in this manner all around the set so as to cut off all surplus plaster very evenly, and so that the excess will drop into the waste-box.

This accomplishes the same work as the knife, and does it much better, doing away with the danger of marring the wax with the knife, and also bringing the plaster more accurately to the top of the set.

The wax around the side of the set can be chalked, which will facilitate the detachment and dropping off of the surplus plaster.—R. Brittain, Cosmos.

TEETH MADE OF PAPER.—LATEST THING IN DENTISTRY ARE PAPIER-MACHE MOLARS.—Paper teeth are the latest thing in dentistry. For years some substance has been sought for which could replace the composition commonly employed for making teeth, and a fortune awaited the man who was lucky enough to hit upon the right material. Although paper has some disadvantages, they are all small compared to its many qualifications, and paper teeth are likely to be used exclusivly, at least until a more perfect material is found.

Up to this time, says the New York Press, china has been used almost entirely, but it presents so many disadvantages that dentists always have been on the lookout for some other substance which could replace it. Not only does china not resist the action of saliva and turns back, but china affects the nerves of the jaws. People who wear false teeth often complain of sub-orbital neuralgia, and this is put down by many dentists as being caused by the heat or cold acting on the china or porcelain. Porcelain or mineral composition also is liable to chip or break, and for these reasons have never been satisfactory.

The paper teeth are made of papier-mache, which is submitted to a tremendous pressure until they are as hard as required. Their peculiar composition renders them cheap, and the price of a set of teeth will go down considerably, owing to the new invention. The color of the papier-mache can also be made to vary, which is an important point, as no two sets of teeth are identical in color, some teeth having a strong yellowish cast, while others are bluish white. In order, therefore, to obtain the right tint coloring mater has only to be introduced into the mixture before the tooth is cast, in order to match the other teeth exactly. It is in this particular that china teeth often fail to appear natural, their color differing from the other teeth in the mouth, and showing that the tooth is artificial.

Another novelty with regard to teeth consists in their filling. Dentists no longer use as much gold or platinum as they did formerly—in fact, metal fillings are out of date. Bone or ivory is the substance employed, and both possess the advantage of appearing more natural. Of course, those who already have gold or platinum fillings will not go to the expense and trouble of having them removed, but they have been tabooed by the smart set, and in future nothing so conspicuous will be used. Neither bone nor ivory satisfies the dentists, however, and they are hunting around for some composition which will be both durable and elastic, and yet will match the color of the teeth.

REFINING GOLD SCRAP.—To those dentists who wish to refine their gold scrap themselves, the following plan is recommended: The scraps should be dissolved in a small quantity of nitro-muriatic acid—warming hastens the solution—the solution should then be diluted with about three times its volume of water, and nearly neutralized by adding a small quantity of sodium carbonate. The solution should remain slightly acid or the gold will be precipitated; in that case redissolve by adding a few drops of nitro muriatic acid. Filter the solution, washing it through with water, then add slowly while stirring a concentrated solution of ferric sulphate, acidulated with a little sulphuric acid. Set the solution aside for twenty-four hours, so that all the gold is precipitated, then decant the liquor through filter paper to catch any particles of floating gold, wash the precipitate out of the vessel into the filter palter, roll up the paper and fuse with plenty of flux.—Office and Laboratory.

TREATMENT OF PORCELAIN FACINGS TO PREVENT FRACTURE.—Porcelain facings in soldering require as much intelligence in handling as does a glass goblet or porcelain dish in washing. A dentist who invests a crown or bridge and as soon as the investment is hard enough to handle places it over the gas stove and puts on a full blast of heat, can feel himself one of the chosen few if he does not always have a broken facing.

The contraction of platinum being more rapid than porcelain in cooling, requires only one consideration in solding, and that is that the flame leaves the point upon the incisive edge where the platinum laps. This insures equitable cooling throughout the tooth, and does away with those minute fractures so often seen upon the incisive portion of the incisors and cuspids when backed with platinum, and so rarely seen on the same teeth backed with gold.

Dry the investment slowly until all traces of moisture are driven off, then increase the heat until the investment is as hot as it is possible for it to get over the gas heater, transfer to an asbestor block, solder, and cover with another asbestos block, and leave until cold.

THE RELATION OF DISEASED TEETH TO GENERAL DISEASES.—In a recent work by Oscar Amoeda (Paris, 1898), on the medico-legal aspect of affections of the teeth, there is an excellent chapter on the relation of diseases of the teeth, gums, alveoli, etc., to various general diseases. Infectious diseases, such as la grippe, scarlatina, variola, typhoid fever, erysipelas, etc., provoke dental troubles, which vary in accordance with the patients' age. In teething children trophic or follicular troubles, which, according to their intensity, produce erosions or total loss of the gum. Infectious diseases, and particularly the grippe, are frequently accompanied by periostitis and alveolo-dental abscess, and may also cause sinus disease. The alveolo-dental periostitis of diabetes is characterized as an initial sign of that affection by a period of simple deviation. In the second period the teeth loosen with alveolar catarrh. In the third period the teeth fall out. There is sometimes a further state of osseous absorption, which may or may not have been proceded by gangrene of the gum. Besides these lesions the teeth themselves may be affected by caries. This happens often, and begins usually at the last molars. In time, only the roots remaiin to the patient. Arthritic, gouty and rheumatic subjects are predisposed to tartar. Other accidents are alveolar and alveolo-dental periostitis, dental necrosis and fall of the teeth; simple and aphthous gingivitis; alveolar absorption, caries and necrosis of the jaw. Gout is also said to produce wearing away of the teeth. Hereditary syphilis leads to micro-dontism, nauism, amorphism and vulnerability of the teeth. Tuberculosis may attack the gums. In rickets, dental anomalies are not constant; there may be alterations in the enamel, its prisms being disposed sinuously, with large interspaces. The dentine may be remarkable for its large canaliculæ. In locomotor ataxia the teeth often fall out without pain, hemorrhage or suppuration, and irrespective of previous decay. This process begins in the upper jaw, and is generally followed by alveolar resorption. Pregnancy is often accompanied by gingivitis. During menstruation, women, and especially young girls, are subject to attacks of alveolo-dental periostitis. In osteomalacia the teeth rarely are directly involved, but are loosened in the alveoli. In scurvy, the teeth readily loosen and fall out, owing to the state of the gums. In morphinism the ivory suffers chiefly. There is no pain nor periostitis. The course is rapid, the hair often falling at the same time. May be due to central influence or altered saliva. In osteomyelitis of the jaw the pus may gain the alveoli and loosen the teeth, especially the wisdom teeth. The author finishes by alluding to actinomycosis and stomatitis. He fails to mention the effects of persistent nasal obstruction upon the upper teeth.—*Medical Review of Reviews, Feb. 25th, 1899.*

CAUSES OF HIGH PALATE.—Grosheintz (*Arch. f. Larygol.*, VIII, No. 3), believes that the high, narrow palate (hypoistaphyly) is usually associated with a generally narrow configuration of the upper part of the face (leptoprosopy). Narrow nasal cavities (leptorrhiny) and narrow orbits are usually associated with high palate. High palate rests, as a rule, upon inborn racial peculiarity of skull formation, and is not influenced by causes operating after birth.—*Medical Review of Reviews, Feb. 25th, 1899.*

ACIDITY OF THE MOUTH DURING SLEEP.—The dentists tell us that an acid condition of the fluids of the mouth plays an important part in the etiology of dental caries; also that the causes of that affection are particularly active during the hours of sleep, when saliva stagnates, so to speak, instead of being subjected to the agitation and renewal incident to the chewing and other movements that to some extent are almost continuous except during sleep. However carefully we may cleanse the teeth and rinse them with antiseptic solutions on going to bed, therefore, we are guarding but temporarily against decay; it gains on us while we are asleep. Possibly those who suffer with insomnia may snatch a crumb of comfort from his reflection, but we fear there is in it no consolation for the mouth-breathers, for the desiccation of the mouth which takes place in them during sleep, while enough to give rise to considerable discomfort on their waking, is quite insufficient to hamper pathogenic bacteria in their work of destruction.—New York Medical Journal, March 18th, 1898.

SODIUM SALICYLATE FOR TOOTHACHE.—Dr. Frederick C. Coley, in an article on the medical treatment of toothache in a recent number of the *Practitioner*, states that of all medical remedies for toothache he knows of none which is so successful as salicylate of sodium. He believes it is especially useful in those cases where the pain is started by "taking cold." A dose of 15 grains will usually relieve the pain very promptly and if this is repeated every four hours the inflammation may entirely subside, leaving, of course, a carious tooth to be disposed of according to circumstances. The addition of belladonna is often advantageous. Fifteen grains of sodium salicylate, with fifteen minims of tincture of belladonna, will often procure refreshing sleep instead of a night of agony. It is especially valuable with children, where extraction of teeth is to be avoided, if possible, lest the development of the maxilla should be injured.—*N. Y. Med. Times*.

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, NOVEMBER, 1899. NO. 7.

Selections.

ARTICLE I.

BRITTLE PLATINUM PINS IN PORCELAIN TEETH.

GEORGE M. P. MURRAY, F. R. C. S., DUBLIN.

As compared with the delicate spectroscopic analysis of Professor Hartley, the experiments carried out by us are, perhaps, crude and somewhat "rough-and-ready," but the "dropping off" of teeth in practice is a "rough-and ready" affair, and the language used by patients in describing it is sometimes rather "rough-and-ready," too. We may, at all events, claim for these experiments the merit of being practical, and of serving to eliminate some of the suggested causes of this mishap.

Before proceeding to a detailed description of these tests, it may be well to impress once more upon all interested in the matter that our object has not been to fix blame upon anyone, but simply to find out the truth, and the object of the investigation would be just as fully and satisfactorily achieved if we could prove to demonstration that these fractures were due to some faulty procedure on the dentist's part, as if we were to find a definite and damning impurity in the pins of the teeth as supplied to us by the manufacturers. To find the true cause and its remedy has been, then, our sole object.

The negative result of Professor Hartley's spectrum analysis cuts two ways. It proves that the brittle pins contained originally no metallic impurity; but it also proves that no such impurity was introduced by the dentist's fault, either by the use of base or unsuitable solder, contaminated investment, or in any other way.

It is probably the experience of most victims of this very annoying and discerning accident that it is more often found to happen with plate teeth than with vulcanite, but this, we venture to submit, does not prove that soldering has anything whatever to do with the case, or that brittle pins exist more frequently in teeth so dealt with.

The brittle pins have some cohesion and some tensile resistance is, we think, evident from the fact that they often stand use for some weeks before parting company with their mounting; and it would seem as if they had a better chance of surviving when anchored into a comparatively yielding and elastic material like vulcanite, than when held between two such rigid substances as the porcelain and a metal backing—a condition specially unfavorable for the withstanding by brittle crystalline metal of even a slight jar. The fact of the lesion ever occurring in connection with vulcanite proves far more in one direction than the fact of its happening perhaps less frequently can possibly be held to prove in the other.

My first experience of "dropped-off" teeth was with four bicuspids which quietly came away from a vulcanite mauillary denture.

Engineers tell us of some conditions under which steel becomes brittle and unreliable, but that is after prolonged strain and constant vibration, whilst the fracture under consideration invariably occurs at the very outset of the pin's promising career, and in no case has it happened to teeth which had been long in use.

I would venture to anticipate a suggestion which has not yet been advanced, but will probably occur to some one to bring forward as a simple cause—namely, that a faulty backing, not properly home to the porcelain, throws a heavy strain upon the pins at their point of exit from the tooth, whilst in vulcanite teeth it might be held that insufficient support in the rubber threw all the strain upon the same point. These hypotheses, however, are exploded by one of Professor Hartley's experiments, in which he demonstrates that the fragments of the broken pins are themselves brittle and crystalline, and when fused into a button the metal still retained these defects, thus showing that the brittleness was not confined to one point.

Light is thrown on an investigation of this kind by spontaneous and by deliberate experiments. Under the former heading falls our observation of what occurs in the ordinary course of things. Thus we observe that the heat applied to platinum in making the pins does not ordinarily render it brittle, neither does the heat of baking the porcelain. If heat were the cause, all the pins should be brittle. Nor are cases wanting, as we have seen, where the pins break without being subjected to any high temperature in soldering. We also know from observation, or spontaneous experiment, that direct violence usually breaks the porcelain, leaving the pins intact, and that a prolonged strain will draw the pins out of vulcanite, or even stretch them.

These observations prove much, but we have thought it well to supplement them by certain deliberately applied tests under conditions carefully noted and controlled.

NOTES ON SOME EXPERIMENTS WITH PLATINUM PINS.

For experimental purposes fourteen plate teeth were taken, with presumably tough pins, as they had been in use in the mouth for over ten years—viz., nine American teeth (gold backing), and five English teeth (D. A. backing). All had been riveted.

No. 1. With knife and hammer an attempt was made to split off English tooth from backing. Result: Tooth broke away, leaving pins intact in backing.

No. 2. American tooth, similarly treated. Result: Identical with No. 1.

No. 3. American tooth—(a) similarly treated. Result: Same as foregoing (considerable force required to split tooth away). (b) From the backing one of the pins was broken away with pliers. Fracture fibrous.

These three experiments were intended to test toughness of pins in the teeth selected for experiment.

No. 4. American tooth invested in plaster and fresh sand, dried out and heated with blowpipe till backing was fused, then split off with knife and hammer. Result: Pins so soft that knife cut deeply into them, one breaking through the uncut portion with fibrous fracture, the other coming away with backing, the latter, when broken off with pliers, shows fibrous fracture also.

No. 5. A repetition of No. 4. Result: Pins remained intact in backing, one being broken with pliers shows fibrous fracture.

No. 6. English tooth, invested in plaster and sand, containing fillings of lead and zinc. Heated up and soldered, and split away with knife and hammer. Result: Very difficult to split off. Pins remained intact in backing, tooth breaking away. One pin being broken off with pliers, shows fibrous fracture.

No. 7. A repetition of No. 6. Result: Identical.

No. 8, American tooth. Investment containing lead and zinc fillings. Heated to the extent of fusing backing, and then split off as in other cases. Result: Knife nearly cut through pins, fracture of uncut portion being fibrous

No. 9. English tooth, invested in plaster and freas sand, heated up and soldered with smoky flame, and split off as in other cases. Result: Pins cut through by knife.

No. 10. English tooth similarly treated. Result: One pin broke (fibrous fracture) the other coming away intact with backing.

No. 11. American tooth. Investment containing zinc and lead fillings, heated up with smoky flame till backing was fused, split off as before. Result: One pin nearly cut through, fracture through remaining portion fibrous. Other pin came away with backing.

No. 12. American tooth, invested in plaster and clean sand. Heated up and soldered with smoky flame, and split away as in other cases. Result: Pins remained intact in backing.

No. 13. A repetition ot No. 12. Result: Pins very soft, nearly cut through.

No. 14. A repetition of No. 12. Result: Pins came away with backing; one, on being broken with pliers, shows fibrous fracture.

These experiments would seem to show that neither overheating, "impurities in investment," nor "a smoky flame," will cause sound platinum pins to become brittle or to break with the peculiar crystalline fracture which characterises the pins of the teeth which "drop off."

FURTHER EXPERIMENTS.

Four unusual American teeth were taken, the remainder of a set of six. Of the two used, one had "dropped off" after a few days' use; the other is in use a year.

No. 15. The pins of three of these teeth were broken with pliers, leaving a fibrous fracture.—*Ia. Dental Journal.*

ARTICLE II.

THE INFLUENCE OF THE QUALITY OF DRINKING WATER IN THE STRUCTURE OF THE TEETH.

M. E. LOUGUET, SURGEON-DENTIST OF THE FACULTY OF PARIS.

In the issue of "L'Odontologie" for May 15 last, mention was made of the following statements contained in a work by Dr. Rose, of Munich: 1.—The harder the water and the richer the soil in lime and magnesia, the better the structure of the teeth. 2.—The softer the water and the poorer the soil in lime and magnesia the worse the teeth.

One naturally asks, Are these statements in accord with generally observed facts, and can definite conclusions be drawn from them? In the first place, it seems extraordinary to hold the view that water of high sp. gr., and therefore indigestible, should facilitate the nutritive changes which take place in the organism, and furthermore, it must be remembered that the lime necessary for building up the skeleton is not obtained from drinking water alone, but also from the solid food, on the nature of which much depends.

According to Dr. Rose, the inhabitants of districts having a calcareous subsoil should possess better teeth than those in countries where the subsoil is composed of primordial rocks, granite, crystalline schists, etc.

Now, according to Dr. Magitot, in the days when a faulty denture meant exemption from military service in France, the following differences per 100,000 conscripts were found to obtain: 108 in the West, Southwest and in the Central Plateau, against more than 1,100 in the East and the North. But to glance at the geological map of France shows at once that this does not tally with the nature of the subsoil. Certain other countries also tend to prove the inaccuracy of Dr. Rose's conclusions. Thus in Wales, Ireland, and a part of Scotland, where the older formations of soil vastly predominate, the teeth of the inhabitants are superior and less liable to decalcification than in England, which rests chiefly on calcareous formations.

There are two causes which appear to exercise considerable influence on the structure of the teeth and their power of resisting caries, viz., food and race. A flesh diet contains less of the salts necessary for calcification than a purely vegetable diet, and, moreover, the salts in the former are presented in a less assimilable form than the latter. But the nature of the food alone will not account for the differences in dental structures found in different regions Here the racial element comes into play. Certain of the lower races (Austrian aborigines), certain tribes of Central Africa, have a superior denture to that of the civilized white man, whilst from a dental point of view the Malays occupy an intermediate position between the negroes and the whites.—"L'Odontologie."

ARTICLE III.

BACTERIOLOGY IN THE TREATMENT OF DISEASE.

C. T. WHINERY, D. D. SC.

Read before the Toledo Dental Society.

The discovery of bacteria and their association with different diseases has opened up a new epoch in the history of the dental and medical professions. The honors have not been entirely with the medical men, for, while Koch, Pasteur, Frankel and Sternberg have been working in their specialties, Miller, Boedecker, Blank and others have been revealing to us the hidden science of our profession. It is hard to believe that there is a physician or dentist living to-day who would doubt the existence of such a science or who would be so conservative in his practice as not to apply it more or less in his daily work. Yet instances come up quite frequently where both physicians and dentists practice entirely without any regard whatever to bacteriology.

To verify this statement I will relate a case that came under our observation. About two years ago one of the local physicians (enjoying the luxury of a good home and the benefits of a lucrative practice), brought a girl about fifteen years of age, afflicted with necrosis of the frontal bone, to the office. After the bandage and cotton were removed, the case showed where the disease had destroyed the overlying tissues and the bone was exposed to the size of a twenty-five cent piece, with but a thin lamina remaining to cover the brain. There was pus present in an appreciable amount along the entire border of the affected part. Granulation tissue was showing itself in some places, but with the lack of antiseptic conditions it had no chance whatever to become healthy and work toward restoration. The object of the physician's visit was to use a large bur in the dental engine and cut away the diseased bone. This was done without sterilizing or even washing his hands or the bur. The grindings were blown from the cavity with his mouth, and any remaining pieces were wiped out with the bandage that the patient had worn. After the operation was completed the same cotton still moist with pus was put into the wound again, where each germ could form a new colony of its own and tear down as fast as granulation took place. When asked if he ever used any antiseptic dressing or precaution in some cases, he merely smiled and said he did not believe in such trash and had never carried it out in his practice. The case no doubt would have been hard enough to treat under the most favorable conditions, but that does not excuse the operator rom employing the best methods that the profession offers, neither does it apologize for his thick skin and bull-headedness. We did not see the case again and cannot say what was the ultimate result. But it is safe to assume that the disease passed through the lamina of bone that protected the brain, and that this organ became affected also.

In the treatment of diseases of bacterial origin, the sooner we render conditions adverse to the proliferation and welfare of the germ, the sooner will we reach the desired results. Germs thrive and multiply under definite temperature (in the body that temperature is 98.4 degrees), with slight variation to some and greater to others. The germ of typhoid fever, for instance, has a wide range of temperature. It is said that it can hibernate in a cake of ice and then come out like the ground-hog in the spring, full of life and vigor to enter upon its coming campaign. Germs with such resisting powers do not pass through these periods without first protecting themselves. In order to bring about this fortification, they inwardly collect their vital principles into a granular mass, which is surrounded by a tough resisting membrane impervious to temperature and moisture.

All germs require moisture, some need oxygen, others do not, and all demand plenty of food, and that means more than three meals a day. In the mouth we find every requisite for the flourishing of a colony of bacteria. There is the proper temperature and sufficient moisture (and I suppose among those requiring moisture could be classed the germs, which belong to the toper gang, who never see a sober moment, and look upon water as a thing to bathe in and not fit to drink). Then there is a constant supply of oxygen for those that require it and food in abundance.

There are comparatively few anærobic bacteria, those which are able to exist without the presence of air. But among this class are the ones which produce decay under air-tight fillings. Every dentist has noticed its ravages in such cases to a greater or less degree. It is, therefore, of highest importance to thoroughly remove all decay before filling. It becomes necessary, however, to make one exception to this last statement, and only one. There are times when a thorough excavation of decay would expose a live pulp. Soft decay of course should always be removed, but the hard, brown layer so often found over pulps can be successfully sterilized with the many agents we have at command, and afterwards dehydrated with alcohol as a secondary precaution to prevent further activity of the germs in the tubules.

It follows that if infectious varieties find abode in the mouth, they are liable to assert their action if an opportunity is offered and so cause the mouth to become a center of infection.

What has the deposits of lime upon the teeth to do with the subject of this paper? Let us trace the effect of the deposits upon the tissues and I think we will readily see. As was said before, the mouth furnishes every requisite for the flourishing of a colony of bacteria, and also that the mouth should be in the best possible condition to fight its daily battles. The lime salts by their constant accumulation act as a continual irritant to the gum tissues and the gums use every means to hold their position, but the enemy are too strong for them and they are forced back. This allows room for more deposit and the same thing happens again. The distribution of lime, where there is a tendency to accumulate at all, is usually general and the irritation then becomes general, followed by a feverish and swollen condition of the gums, with the ultimate breaking down of their substance and adjacent parts and rendering them unable to resist the action of the germs present in the mouth; if conditions are favorable a well-developed case of pyorrhea follows. The presence of the lime deposits thus acting as the chief exciting cause lowers the vitality of the gums to the point of bacterial infection.

Of the many kinds of bacteria that are always present in the mouth, there is only a small per cent. of them that are capable of doing much damage. But among this few will sometimes be found the germs of typhoid fever, the bacillus of tuberculosis and diphtheria and others of such severe type. Beside these there may be mentioned the fermentative variety which act upon the food remaining after a meal, forming acids which attack the lime salts of the teeth, producing the so-called dental caries. The saliva being neutral or slightly alkaline in reaction gives nature no remedy to overcome the action of these germs. It therefore becomes the dentist's duty to use and prescribe such washes as will help nature to exterminate these pests, and to teach the patient with regard to proper care of the teeth in order to keep the mouth in as healthy a condition as is possible.

In the foregoing I have not attempted to cover the subject thoroughly, but merely to emphasize a few of the important principles necessary in the treatment of diseases of bacterial origin.—*Indiana Dental Journal.*

ARTICLE IV.

NERVANIN.

DR. A. D. KYNER, BLUE MOUND, ILL.

Within the past year orthoform has filled a place that has, heretofore, been practically unoccupied by any remedy possessing the necessary qualifications of a typical anæsthetic. Such a remedy should be non-poisonous and of slow solubility. None in use was non-toxic; all were too rapidly absorbed and their action of but short duration. The slow absorption of orthoform by the tissues, its absolute non-toxity and antiseptic properties fulfill all the requirements for such a preparation. The great success attending its use made it most desirable to obtain this salt in a soluble form for subcutaneous injections. The inventors, Prof. Hinborn and Dr. Heinz, have succeeded in obtaining a soluble compound of neutral reaction, and have named it "Nervanin." Experiments have demonstrated that nervanin is but one-tenth as toxic as cocaine. Eight grains was found to be the maximum dose that could be administered subcutaneously without injury, and the experience of Drs. W. Rotenberger, Marcus and others confirm its practical non toxicity.

For the extraction of teeth, a 5 per cent. solution is employed, and like eucaine, the solution may be boiled without decomposition. A sterilizing agent need not be added, as nervanin in 1 per cent. solution prevents bacterial growth.

I believe that a 5 per cent. solution of nervanin, if properly injected into ordinarily healthy gum tissue and allowed to act for from three to five minutes before operating, will produce a deeper, more profound and more prolonged anæsthesia than either cocaine or eucaine B. In extracting difficult roots, patients have experienced no pain when the alveolar process was cut through to grasp the root. I have never obtained this immunity from pain with other anæsthetics, and therefore believe that it penetrates deeply. The anæsthetic effect is prolonged for a number of hours after operating, as careful inquiries made of patients for whom I had extracted record absolute freedom from after pain. Careful attention was given to the gums to note whether any irritation was produced, and in every case examined the gums rapidly returned to a normal condition without œdema or sloughing. The non-irritating properties thus shown will especially recommend themselves to all who do not wish to treat "sore gums."—*Items of Interest.*

ARTICLE V.

THE VALUE OF HIGH FUSING PORCELAIN IN CONTOUR WORK.

JOSEPH HEAD, M. D., D. D. S., PHILA., PA.

In the year 1882 Herbst was advocating glass fillings. These were made by taking impressions of the cavity in wax and making two moulds in such material as plaster and asbestos. The ground glass was then flowed into the first mould, where most of the shrinkage occurred. The partially formed filling was then removed, and placed in the second mould, when more glass was added until the filling was completed.

Even with this crude method the results were fairly satisfactory; but in 1887 Dr. C. H Land made mechanically perfert edges possible, by devising the metal matrix. He used both gold and platinum, but found the latter preferable, as platinum could be adapted with a facility equal to gold, and allowed the use of high fusing tooth body, which is much stronger and less likely to deteriorate than the lower fusing bodies, these of necessity containing a large percentage of borax or glass.

From the discovery of the metal matrix dates all effective porcelain filling. Pieces of porcelain had been ground to fit labial cavities with fairly good results, pieces of enamel from extracted teeth had been inserted in a similar fashion, but the accurate adaptation of porcelain to approximal cavities as far back as the molars was impossible until the metal matrix was evolved; and Dr. Land deserves the thanks of the profession for this discovery.

At present the value of porcelain fillings is being gradually recognized. But the advocates of this method are represented by two distinct factions, namely, those who believe in using a low fusing porcelain that will melt in a gold matrix, and those who believe in using a platinum matrix and a high-grade porcelain that has a fusing point at least equal to the continuous gum which has been provd through years of experience to be strong and permanent. Let us examine the advantages and disadvantages of these two methods. In either case the cavities are similarly prepared. They must be shaped free from undercuts so that the matrix can be readily withdrawn. Where necessary a large separation should be obtained, and this is usually necessary in approximal cavities. The edges should be sharp, they should be smooth and free from all irregularities. But here the similarity ends. The advocates of the gold matrix are either compelled to invest the matrix, to prevent the gold from being burnt, while the porcelain is being fused, or else to use a porcelain of such low fusing material as to make its future deterioration in the mouth almost a ccrtainty.

On the other hand, the advocates of platinum can flow high fusing durable body into a bare matrix, which is clean and readily replaced in the cavity for a second burnish, without danger of the distortion that must of necessity arise if any of the investment adheres to the outside.

If, however, but one burnish is used and the matrix is to be maintained in the investment until the entire filling is fused and ready for the cement, two objections may be noted that do not appear where the matrix is free to be replaced in the mouth. First, the color cannot be tested, and where necessary altered to a more perfect shade; second, the distortion caused by the unequal expansion and contraction of the metal and porcelain cannot be remedied as is possible when a second burnish is used.

Of course, to a great artist who could infallibly mix the colors to match, the first time, this chance for a second matching is unnecessary; but for the ordinary dentist such extra aids are valuable. In regard to the distortion caused by the unequal expansion and contraction of the matrix and porcelain, it is quite true that in pinhead cavities the warping is so slight that a second burnish is unnecessary, as the variation is less than the probable personal error of the operator; but in large cavities, especially where compound curves exist, the double burnish is most valuable, and the best results cannot be obtained without it.

Dr. Williams, in his interesting letter on porcelain fillings, that appeared in the April "Cosmos," advocates a high fusing body as a basis, and uses a lower fusing enamel for a finished surface. This is an excellent plan, and no doubt makes a much stronger filling than if the low fusing enamel only were used. I warmly approve his plan, and may add that I have used a method similar to it for over a year with good results. First, I used chips of high fusing porcelain teeth, mixed with low fusing enamel for the first biscuit. Later I used different colored high and low fusing bodies for the first and second bakings, just as Dr. Williams suggests, only my lowest fusing body was probably higher than his highest fusing body, but finally I decided to mix one part of high fusing colorless tooth body with three or four of the color desired in the lower fusing enamel for the first baking, and thus obtained excellent results without the necessity of having a large number of colors in the high fusing material. The one part of the high fusing colorless body added to three or four parts of the regular enamel lightened to so little that the plain enamel flowing over it on the second baking gives absolutely unchanged color, while undue contraction is avoided and the greatest strength obtained.

The plan advocated by Dr. Williams and others of packing in body while the matrix is in the tooth is excellent in simple cavities, easy of access, but in approximal cavities, complicated by blood and saliva, the matrix usually needs to be washed or heated to redness before any wet powder can advantageously be inserted. Theoretically the idea is excellent, and those who can successfully use it will no doubt be taking a step in advance. These slight deviations from Dr. Williams' method are, however, insignificant, and I heartily endorse his method and hope that the low fusing enamel used by him and Dr. Jenkins will prove as durable as the higher fusing enamels.

In summing up the pros and cons of the two schools, it may be noted that the advocates of gold for a matrix claim for it the sole, and if true, the very important, advantage that it makes a more perfect matrix than platinum.

While the advocates of platinum for a matrix feel that they are able to get perfect adaptation with it, they do not feel compelled to resort to investment; they are absolutely free in the use of the second burnish, and above all, they can fuse a material which resolutely keeps its color under fire, that makes contour work easy, and has undisputed strength and permanence.

A few words on the subject of furnaces may not be out of place. The gas furnaces of Land or Downie, with their platinum muffles, are most effective, in that the work can be removed without cooling the furnace. The highest fusing bodies can be baked in these furnaces, and if efficacy were all that is desired, these furnaces would be perfect, but they entail the working of the bellows by an experienced person; they necessitate a certain, or rather uncertain, amount of smoke and gas, and the noise that accompanies perfect combustion is disagreeable to the ears of nervous patients. Therefore, if the dentist can obtain a 110-volt current I should strongly advise him to do so; if, however, electricity be not obtainable, I should still advise him to get a gas furnace and to do his fusing in the laboratory. The little electric furnace manufactured by Ash & Son, so warmly advocated by Dr. Williams, is absolutely perfect for the purpose of which it was built; it fuses the low fusing bodies of Ash with great precision, and will not burn them unless there be great carelessness. It will not satisfactorily fuse the higher-fusing bodies, such as are commonly used in the platinum matrix, but as it was not intended for that purpose this is no discredit, and it has the great advantage seldom possessed by electric furnaces of having an open muffle, like the gas furnace, from which the work can be removed without breaking the current or materially reducing the heat. The Custer electric furnace is the one I have found most satisfactory for high fusing work. The peep hole allows the work to be readily seen, and if a second or third baking is desirable, the combined time of fusing does not occupy over six or seven minutes.

Before closing, it may be well to clearly define the method of filling teeth with porcelain used by me.

The cavities, as before stated, must be free from undercuts, the edges sharp and smooth, and where they are approximal there must be sufficient separation to allow the matrix to be withdrawn with perfect freedom. This last is most important. Approximal cavities between the front teeth, as Dr. Williams urges, should be cut away freely from the back, just as we have long been accustomed to do in using gold. When the fillings are between bicuspids, the palatal or lingual walls should be cut away freely wherever it is necessary. With a perfect matrix excellent results can easily be obtained; with a distorted matrix success is impossible. Where the filling is to stand the force of mastication the edges of the cavity should always be at right angles to the grinding surface.

When a cavity is so prepared that the matrix may readily be removed, a piece of soft platinum one-thousandth of an inch in thickness that has been thoroughly annealed in an electric furnace or in a platinum muffle where no gas can touch it, is placed immovably over the cavity and burning into all parts, great care being taken to sharply and smoothly define the edges. Should the bottom tear, it is of little moment, so long as the edges are smooth and intact.

Sometimes it is useful to form the matrix by driving the metal into all recesses with cotton, but while this is undoubtedly of use in some instances, the careful burnishing of a motionless piece of foil will generally give the best results. The matrix when finished should be carefully removed, and in order to destroy all organic material heated to redness.

The high fusing porcelains made for inlay work by the Consolidated Dental Manufacturing Co. are in my opinion the best porcelain ever offered to the profession. They are strong, they are tough, and in addition blend their shades with the accuracy of water colors; and the color is so permanent that excessive heat modifies it but little. The color or colors having been chosen, by means of the shade ring, the corresponding enamels should be mixed with water on a glass slab to the consistency of dough. With contours and labial cavities an exact match should be obtained. with approximal cavities the filling should be considerably lighter as the shadows in between the teeth tend to make the dark color, and for want of this precaution disappointment awaits many an operator who has observed the greatest care and nicety in obtaining his match. In such approximal cavities pure white, toned with a little yellow, will in nineteen times out of twenty be the color needed.

When the enamel is mixed, according to the judgment of the operator, in small or simple cavities it can be used plain for both bakings, but in large cavities or contours, for the first baking, one part of colorless high fusing tooth body should be mixed with three parts of the enamel; this will make contour work easy, prevent undue contraction, and lightens the color so imperceptibly that the shade in the enamel in the second baking will be unchanged.

This extra high fusing mixture should be placed in the cavity almost, but not quite, up to the edges. If a contour is desired it should be formed then, proper allowance being made for the enamel that it is to be flowed over it later, but under all circumstances the edges must be left clean and free.

The matrix containing the body is then placed upside down on a piece of soft cotton cloth, to remove the excess of moisture which a few taps on the pliers holding the matrix will bring to the surface. It is then dried and placed in the furnace and fused to a medium gloss, then removed from the furnace, cooled, placed once more in the cavity, and the edges burnished to overcome any distortion caused by the unequal expansion and contraction of the metal and porcelain. The filling is then removed, and built up flush with the plain enamel, when the final firing is given. Should one or two firings be necessary to obtain perfect edges, they can be given, but only one extra burnish is necessary. In stripping off the matrix the edge should always be pulled first from the porcelain, otherwise chipping may result. Some dentists advise the use of the hydrofluoric acid for roughening the under surfaces of fillings before inserting them with cement; but fine grooves cut with a thin copper disk charged with diamond dust give better results.

Any thin, slow setting cement may be used for setting the porcelain. The color should approximate that of the filling. Before insertion the porcelain filling should be washed in alcohol and dried thoroughly, the cavity should then be slightly undercut and dried with alcohol; either a rubber dam or napkin can be used at this stage, but not sooner, as the tooth if dried before the filling is made will change its color, and so render the ultimate match bad. When everything is dry, the cement mixed to a creamy consistency should be placed in the cavity, and the filling being picked up on the end of a sticky spatula, pressed home. Pressure should be exerted until the cement sets or the expansion of the crystallization will cause gaping seams. A hot instrument applied to the inserted filling hastens the hardening of the cement very satisfactorily.

When the excess of cement is wiped off, paraffine or varnish should be flowed over the seams to protect the cement from the saliva, for at least six hours.

On the following day the filling may be dressed down with fine corundum stones or sandpaper disks.

This is the bare process. There are many minor though essential details that practice alone can acquire, details that are too numerous to dwell upon without the risk of complexity. If, however, there are any points not clear, I hope the gentlemen present will mention them, and I shall cheerfully answer to the best of my ability. In closing I wish to emphasize this one fact. I have criticised the methods of some of my professional brothers in this field, but I do not wish it to be understood that I myself am beyond criticism. Too often in dentistry, as in other professions, personal feeling and petty jealousy interfere with scientific co-operation. I admire and respect the champions of low fusing porcelains for the work that they have done; but probably no method is at present perfect. The process of filling with porcelain is too young; time and experiment alone can choose the best, and we may fearlessly await time's decree, certain that whatever is truly best will in the end survive.—*Items of Interest.*

ARTICLE VI.

SUITABLE RECREATIONS FOR DENTISTS.

M. CAVANAGH, D. D. S., OWEN SOUND, ONT.

It will not be the object of this paper to go very deeply into the scientific aspect of this subject, but to bring before the convention and the members of the profession at large a few plain facts with regard to the subject of recreation, and the vital importance of properly disposing of our spare time or "off hours" from the toils of the office, that we may obtain rest from our daily occupation and at the same time develop our faculties along other lines than those of our profession, so that in the end we may bring greater strength, clearer judgment, and better skill to the service of those who repose confidence in us, and that we may be more worthy of that trust.

It is a subject that in my mind has not had the prominence in our dental literature and dental education that its importance deserves. We find a superabundance of theories on pyorrhea, on treating and filling nerve canals, on crowning and bridging; but on the subject of *recreations* (which I feel safe in asserting is just as important to the dentist as any of the above, unless he has great faith in the reward that awaits the martyr), we find very little information. The reason for this lack of attention to this particular subject no doubt originates in the old idea that education consists in book-learning, and that time spent on other than our life vocation is time wasted, and a great many members of our profession are living up to this old and exploded theory to the letter.

In dealing with the subject of recreations in this paper we will make use of the term in its broadest sense. The word is derived from the Latin "creo"—I make, and the prefix "re," meaning again, the literal meaning of the word being to make again, to build up or renew; therefore any agent, any exercise or pastime that aids in invigorating or developing us physically or mentally may properly be called a recreation. One writer on this line says that our first aim and object should be to be men, and, second, to be dentists. Therefore every agent that assists in building up a strong, energetic, well-rounded manhood is of necessity a recreation, and all recreation should be indulged in with this worthy object in view of improving ourselves. It is therefore an educational process, and may overlap or be overlapped by some other papers on the programme.

The dental profession is known by all present to be exacting both mentally and physically—exacting on the mind owing to the fineness of the work and the close application and attention to the most minute details necessary to insure even moderate success; wearing, physically, owing to its confinement, to the long hours spent in one position—and very often an unnatural position at that—and to the undue length of the day often necessary to keep even with our work; trying both mentally and physically, owing to the frequent and harrowing ordeal of spending hours on nervous, irritable patients, who exact their "pound of flesh," and a greater proportion of patience and nerve force every time they call on their dentist. Therefore, just in proportion to the amout of physical, mental, and nervous strain we undergo, just in that proportion does our system demand counteracting and recreative influences, and just so sure as these influences are neglected, just so sure are we on the gradual decline that leads to ill-health and all that it entails, viz., loss or professional skill, loss of practice, loss of income, loss of happiness, in fact loss of the ideal we sacrificed health in trying to maintain; simply killed "the goose that laid the golden egg," and yet how many are committing this gradual suicide. Comparatively few professional men, and especially dentists, utilize their hours of recreation intelligently with reference to the nature of their daily and the compensating character of the exercise necessary in order to maintain mind and body in normal and healthy condition.

It is an axiom in the active life of the word, "That to the young all things are possible," meaning simply that with youth and its adjuncts, health and strength, we should all obtain an enviable position in whatever line our occupation may be. In order to accomplish this pre-eminence, health is the first essential. We find practical illustrations of this fact by looking back over the intellectual lights of the world, and find that the most brilliant intellects that maintained their power for any considerable length of time were supported by strong and vigorous bodies, so we conclude that the maintenance of health is of utmost importance if we are to excel in our chosen profession.

Health is the greatest of temporal gifts. It is an essential to the faithful and competent discharge of duty in every walk of life, and in this age of keen competition it is almost a neccessity to success, and each of us has the obligation devolving upon us of maintaining in as great a degree of perfection as possible this priceless boon. It is immeasureably of more importance than any gain that may be obtained from its sacrifice.

It is also one of our best advertisements; the dentist with healthy, robust frame has a great advantage over his equally skilful brother practitioner in a languid or emaciated body from the standpoint of personal attraction alone, and this certainly counts for something in our profession; besides no matter how strong the intellect or skilful the hand may be, it can never be at its best or render the same service when laboring under the disadvantage of ill-health that it could if supported by physical strength. The happy possessor of health and strength will accomplish more work, do it better, and do it with more pleasure to himself and satisfaction to his patients then he otherwise could do.

So viewing this subject from any and every standpoint we can but come to the conclusion that the obtaining and maintenance of health and strength is our first duty, and should be an important portion of our education.

Physical exercise or recreation carefully and judiciously indulged in is the recognized fount from which springs health and strength. "Shun drugs as you would a plague" are the wise words of one authority on this subject.

As health and strength are the first and most important factors in perfectly developed manhood, we shall first dwell upon the recreations best adapted for physical development and culture and their action on the human frame and organs.

Admitting the value of health and strength, then we may ask, what is health and strength, and how are they to be obtained and maintained by any system of exercise?

Health consists in such a condition of growth and development of the organs of the body as enables them to fulfil the functions easily and completely, and to resist effectively attacks of disease; therefore, it includes in its meaning a certain degree of strength, and strength properly obtained is in the highest degree conducive to health.

Before discussing fully the best methods of recreation for physical development, it will be necessary to take into consideration certain elementary physiological facts that we may more readily see the beneficial effects of exercise.

The life of the body as a whole depends upon the life of innumerable atoms which constitute it and which are continually dying, being cast off and replaced by others, and the general health depends directly upon the activity of this recreative process and the perfection with which it is carried on. The blood carries to every tissue and organ of the body the food necessary for its repair, growth or development. If we move a hand or take a step, certain cells or atoms die and are disintegrated as a result of that movement, new cells must be supplied to take their place and the old ones must be removed and carried to organs.

whose functions it is to eliminate them from the system. All this is done by the blood which, however, becomes loaded with effete material, much of which is thrown off by the lungs in the form of carbonic acid gas.

The health and strength of any individual are in direct proportion to the thoroughness and celerity with which these broken down cells are removed from the system and replaced by others, and consequently anything which promotes the activity of this process is a beneficial and healthy recreation. The only means for safely and continuously stimulating this process into increased activity is physical exercise.

Exercise may be defined as *muscular contraction*, and acts in a manner readily understood. All movements are made by such contraction. If we raise an arm, take a step or bend a finger, we accomplish it, because in response to our will, certain muscles or sets of muscles contract. This is true of all voluntary movements. Other sets of muscles, of which the heart is an example, are not controlled by the will, but act in response to other stimuli. The stimulation of the muscles of the heart is produced by the pressure of blood itself, particularly the venous blood which is brought back from the tissues laden with carbonic acid.

As soon as any act of exercise is begun, a number of the voluntary muscles are put into action. Their contraction compresses the blood vessels and impels the venous blood actively towards the heart, which thus stimulated, vigorously sends the blood in large quantities to the lungs. Then the inspiratory muscles contract and lift the frame of the chest, enlarging it both laterally and antero-posteriorly, the diaphragm pushes down the contents of the abdomen and air rushes into the chest to fill the space thus produced and supplies the oxygen necessary for the purification of the blood; this is then returned to the heart to be distributed anew throughout the system, carrying with it the materials needed to supply the waste caused by the muscular movement originally made. These materials, with regular and systematic exercise, are deposited in larger quantities than are required to counterbalance the destruction which has taken place, then we have the muscles growing or increasing in dentistry or both.

The involuntary muscles also, including the heart and diaphragm, grow stronger in the same manner, the pulsations of the heart becoming more forcible with exercise, but at the same time slower and less obtrusive, showing that it accomplishes its work more easily.

The increased activity of the circulation carries the blood in larger volume, not only to the muscles, but also to all the organs of the body and thus stimulates them to greater activity, strengthening the appetite, digestion and nutrition, thus causing a gain in weight.

The lungs expand more fully and completely and take in an increased quantity of air, thus improving the respiration. The larger amount of blood sent to the skin increases perspiration which carries with it much of the worn-out and useless material of the system through the pores of the skin adds to the resistive power against evil influences from without, such as bad air, etc. The bony framework of the chest, though elastic, does not go quite back to its original dimensions, but gradually increases in size, giving additional room for the important organs which it contains and protects. Thus we find that physical exercise is a recreation indeed, and is essential to the body if we are to keep it in a vigorous, healthy state, for it is by *use* that we develop.

It is true that the voluntary muscles that are the first cause of the action are benefitted to the greatest extent, but at the same time we add to the functional ability of the involuntary muscles, while through the process of respiration and circulation we influence not only the health and strength, but also the growth and development of the whole body, and thus we find in various physical recreations, the secret by which any part of the physique may be strengthened and developed.

The rule of health which prescribes exercise is most easily transgressed, to violate it is only to disregard it, and a sin of omission is always easier than a sin of commission. All glaring sins of commission bring a direct and traceable result. Intemperance, gluttony, and dissipation of all kinds speedily bring a penalty with it, but the evils due to the want of recreation, though no less serious, are insiduous and elusive, and, when we feel the result, in languidness, want of energy, etc., tonics, stimulants and drugs are generally called upon to produce results which would be far more radical and permanent, were we to follow out nature's method, and systematically and moderately indulge in suitable physical culture. We have in this the remedy for most of our ills.

While physical recreation is invaluable in regulating the system and preserving its tone and vigor, care is necessary in prescribing it, and indulgence must be tempered with wisdom and judgment or it is sure to defeat its own end. Our national sports are beneficial, and can only be recommended when participated in with moderation. The desire should be not to excel along any practicular line of athletics, as excellence means over devolment in this age of professionalism and should be discouraged. The professional athlete, while appearing to be a model in physique and the picture of health, is, as a rule, short-lived, owing to the vitality being consumed or the vital organs strained in the over-production of some particular set of muscles, rather than the moderate development of all the organs and muscles of the body.

There can be no fixed rule laid down for the taking of exercise, as each constitution differs in its demands, and it should be the aim of each individual to discover their physical weakness and to patiently and persistently endeavor to bring their debilitated organs or faculties up to the standard. Wonders can be accomplished by patience and perseverance, Sandow, Sampson and Cyr, men who have astonished the world with their feats of prodigious strength, are just as much marvels of patient, untiring effort in their training as they are marvels of strength. We do not make use of this illustration with any intention of its being an incentive to imitate these men, but mere examples of what can be accomplished in physical development, and that even the weakly and delicate may be sure of the result if they persevere in moderate exercise.

While there can be no hard and fast rule for our guidance in this matter a few general principles may be of service in bringing us to a decision as to what kind of exercise is beneficial in our case.

1. Individuals with weak heart, lungs, or in fact, any of the vital organs, should not participate in any very violent or exciting recreation, or the result will be fatigue and weakness; much the same effect as is produced by overwork; mild exercise, gradually increased, must be the rule for such, if the effects are to be beneficial.

2. Those of strong physique demand more vigorous exercise, but their natural tendency is to develop along the lines they need it least; having strong arms and back they adopt rowing, weight athletics, etc., which further develop these already powerful sections of the frame instead of bringing the weaker portions up to this standard of excellence. Those with powerful lower limbs naturally take to walking, running, jumping, bicycling, whereas the muscles of the arms and chest should receive special attention.

3. Those of highly nervous temperament require plenty of sleep and abundance of fresh air. Sleep alone is said to be the secret of Gladstone's wonderful power of endurance; other instances are on record where people of great business capacity found one day each week spent in sleep necessary to keep the mind fresh and vigorous and the nervous system equal to the strain, and yet, if any part of the day has to be shortened to make more room for work it is generally the hour of sleep, but always to our injury.

4. Those having a natural fondness for athletics should be guided and even restrained, while those of more sluggish temperament and studious habits require to exercise will power and force themselves into a course of physical culture as the only remedy for a languid, listless frame; a renewal of our energies is not brought about by idleness, laziness or dissipation; it is use that hardens muscle, develops intellect and gives freedom from that sense of fatigue, that is the portion of those who lapse into indifference mentally and physically, or degenerate into mere "money makers."

Second only in importance to physical recreation is the culture and development of the intellect, and as physical activity is necessary to physical strength and endurance, so is mental activity essential to advancement in the realm of knowledge.

It is not enough that we should know a great deal about our profession; no matter how well posted or how perfectly developed we may be along one line or channel, we are of necessity narrow minded and somewhat of a bore to the society in which we are placed, unless subjected to the broadening influence of study and culture along other lines.

This can only be accomplished by those engaged in professional duties throughout the day by judiciously occupying their hours of recreation. It is this intelligent use of spare time that constitutes the difference between the recreation of a man and the rest of an animal. These hours, though somewhat limited, are not to be despised. Many a man has become famous throug carefully employing them with a definite object in view. It is the intelligent use of these hours that prevents us degenerating into cranks and old fogies, and falling into grooves and ruts in our professional life.

As an illustration of what the want of educational influence and the necessity of progression will accomplish, I wish to relate a personal experience with a member of our profession who lives less than 100 miles from the City of

Toronto. He was a stranger to me, but I called on him when passing through his town, and had not been in his presence a quarter of an hour before I found out I had struck the fountain-head of dental knowledge. Crown and bridge work were accomplishments of his when the Dental College was struggling with the alphabet of dentistry; in fact, this worthy institution, from the dean down, was a huge swindle, and all that was necessary to make a brilliant success as a dentist, was to possess the same amount of brains that he possessed, and use them as he did, and then dental colleges, conventions and literature were a needless expenses. It is needless to state that this dental headlight is only such in his own estimation.

This is perhaps an exaggerated instance of bigotry and narrowmindedness, but we certainly, one and all, descend the plane to a certain extent that leads to this goal, unless we take advantage of the opportunities we have to broaden our sphere of comprehension, and brighten our ideas by learning from those who have had more experience than we.

While recreation along other lines is most essential, we should not exclude entirely the subjects that relate to our profession.

One of the very best and most profitable means of recreation is the annual and local conventions. In addition to the papers read, discussions engaged in, and information received, there is the indefinable satisfaction of contact with numbers of men who are engaged in the same occupation; the renewal of old acquaintances and friendships; difficulties explained away, and many other benefits derived from thus meeting and indulging in professional intercourse, and while it is somewhat along the line of our office work, it is so entirely different in its relations and surroundings, that it affords a complete rest, so that at the end of the vacation, we return with renewed health, brain rendered more active, and a sense of weight removed which continues as an incentive and inspiration through the balance of the year.

One essential to an ideal mental recreation is that it must be of absorbing interest, such that it will take our minds and attentions entirely from the worries and responsibilities of our office-work, giving the faculties thus employed a complete rest, and at the same time, developing others not thus employed.

It should be entertaining and instructive, something for which we have a natural inclination, and which attracts us toward it rather than requires compulsion on our part, for anything that becomes a labor adds to the fatigue of the day rather than an aid in recuperation.

Another essential in our choice should be the value of the subject as an education. It is a very easy matter to fritter away our spare moments in a light, frivolous kind of reading or other pursuit, perhaps pleasurable in its character, and to a certain extent, restful from our daily toil, but from which we obtain no lasting benefit, and which is in reality injurious in that it dissipates the mind, makes it less retentive, and destroys a taste for that which is weightier and worthy of our consideration.

Still another object should be to pursue each subject chosen (and they should be limited to correspond with the time at our disposal) until we acquire more than a passing knowledge of those undertaken that we may fit ourselves for usefulness outside our profession as well as in it. Great good has been accomplished, and many men made famous by properly used hours of recreations.

All of our possibilities do not lie in the one sphere that we have chosen for our vocation. We should not narrow ourselves down to the one idea of life; we are gifted with many capabilities, and we are not filling the place in the world that we were designed to occupy unless we develop and then use, as far as possible, our various talents with the ultimate end in view of doing good.

We can only make mention of very few of the many subjects that, in our mind, might be pursued with profit and pleasure during our hours of recreation. These, of necessity, must vary with the tastes and capabilities of the individual, and as no definite rule could be laid down in the realm of physical culture, neither can we in the mental; any at all, when properly used, may be, and, no doubt are, beneficial to a certain extent, but our aim should be to pursue those which yield the greatest amount of good.

Music, I consider an ideal recreation; it is always pleasureable and restful, refining in its influence, elevating in its character, and boundless in its possibilites, a knowledge of which might well be coveted by all.

Botany, with its health-producing rambles through wood and meadow, in search of rare plants, is a pastime worthy of consideration, instructive and interesting, with the double advantage of being both a physical and mental recreation.

Amateur photography is still another recreation that, at the present time, is already a great favorite—and justly so in cultivating a desire for art, in enabling us to see beauties in both art and nature, to which we were formerly blind, in adding still another ray of pleasure to our lives.

Electricity, with its ever-widening influence is a fruitful theme of thought, and especially interesting, in that it is being so extensively used in our profession.

Thus we might proceed, *ad infinitum*, but sufficient has already been said, and with again trying to impress upon the members of the profession the absolute necessity of making spare time, taking it from hours that may seem to be lost, and then using them in a manner that will recuperate mind and body, we gain immeasurably in health, happiness, and in the end, financially as well.—*Dominion Dental Journal.*

ARTICLE VII.

COCAINISM.

J. HARRINGTON BEYNON, M. D.

Never from the frosty hills of the North, or the warm pregnant sod of the South, nor from the arid plains of the East or the virile soil of the West springs a shrub known alike to civilian and barbarian so fraught with possibilities for weal or woe to mankind as that veritable "bush of good or evil" Erythroxylon Coca. Poppy and Cannabis are harmless as milk in comparison.

No drug known to Materia Medica when taken habitually is followed in so short a time by such dire and calamitous results, such utter wreck and ruin, mental and physical as cocaine.

The average life of the cocaine debauchee is about two years, at the expiration of which he will die of insomnia or fall a ready victim to some intercurrent disease, if he escapes suicide or death from marasmus so long.

For centuries the coca plant has been known and used by the Indians of South America. The leaves, mixed with alkaline ash, are chewed for their sustaining and invigorating effect, banishing hunger, thirst and fatigue for days together. But even the native finally succumbs to its poisonous properties, losing appetite, flesh, vigor and ultimately his life from the marasmus which continued chewing induces.

Some fifty million pounds of coca leaves are annually harvested in Peru and Bolivia.

For the prevalence of the coca habit or cocainism in the United States and France, particularly in New York, Paris, New Orleans and other great centers, coca wines, coca lozenges, catarrh snuffs, sundry panaceas and cure-alls containing cocaine in dangerous amounts are largely, if not mainly, responsible.

The formation of this habit is most insidious, stealing upon one like a thief in the night.

Coca lozenges for chronic sore throat, catarrh snuffs for colds or a glass of coca wine for that tired feeling, frequently repeated, soon become a necessity, and long before the unsuspecting victim is himself aware of his bondage the line of safety is crossed and he stands fettered with chains requiring "iron bars and perspiration" to break.

The coca habit is more easily and readily acquired than that of opium, chloral or absinthe, because of the guileless form in which it is presented. It is many times harder to cure and decidedly more destructive. Most habitues who recover are those who take morphine in conjunction. The former drug seems to neutralize the effect, calms the raging nerves and holds the frenzied heart in check.

No sooner is the habit formed than disintegration begins; first the soft tissues, then the bony system, even the teeth become chalky and brittle and the enamel crumbles away.

The majority of victims seem offered upon the professional altar. Those whose vocations call for mental exhilaration and heightened imagination here find a ready but treacherous ally. The Magdalens of to-day and all those who wish to forget, herein also find surcease from sorrow.

The most deplorable cases are those resulting from the hypodermic use of cocaine solution, and in these the effect at first is one of pleasure; the eye is brightened, the color heightened, the expression animated, fatigue is banished, the imagination enriched and brilliant thoughts coin themselves into words. The conversation becomes witty and sparkling, dull care takes wings, and the troubles of the hour are remembered as pleasures that have passed.

While under its influence the victim becomes insensible to hunger, heat and cold. The chilling "mistral" or the scorching "simoon" is alike to him but a laughing zephyr.

Life is a perennial spring and its beaker seems filled to the brim. The day is bright, but the light is fleeting, fleeting, for the night cometh! A night cold and dark and pitiless, without a star, without a dawn! As the days pass more and more of the drug is needed to produce even transient stimulation—the dose to-day is doubled tomorrow.

Ultimately the appetite fails, the strength wanes, the muscles tremble, the face becomes pale and thin, and the mind enfeebled becomes a prey to hallucinations and delusions of persecution.

Degradation is now profound and we have "a gaunt, hollow-eyed spectre, whose demented functions move only in a pitiless circle of self-intoxication—ghastly automatism," whose only joy is the prick of the hypodermic needle.

I have in mind five typical cases of cocainism which came under my personal observation. They were men of ability and promise, of mental and moral stamina above the average.

Two were doctors who took the drug for its own sake to relieve depression and fatigue. One of these severed his connection with the things of earth with pistol ball through the brain. The other died from an over-dose. The third, a divinity student, cut his throat with a penknife.

The fourth and fifth were men of affairs, who, under wise and sympathetic treatment, partially recovered, but to-day are suffering the slings and stings of outraged nature.

I recall a sixth case—would that I could forget it—of a journalist who in his moral abasement sunk so near the brink of the "pit" that the honor of his wife became a thing of barter and sale, for money to buy the accursed drug.

Does it not behoove us all to handle and prescribe this leaf-o'-the-hidden-thorn with the most careful intelligence?

Then let us be advised, for the habit once formed in the majority of cases proves fatal—like the "primrose path of dalliance," it leads to debility, insomnia, insanity and death. But follow rather the lead of kindly nature—"her ways are the ways of pleasantness and all her paths are peace," thus: When weary and worn, leave coca alone. Rest! Sleep!—*Alkaloidal Clinic.*

ARTICLE VIII.

DENTAL JURISPRUDENCE.

Read by Dr. H. A. Croll Palmerston, at Ontario Dental Society Meeting, July, 1897.

Dental Jurisprudence is an old subject and of the greatest importance, yet one of which but little is known by the average practitioner. The "American System of Dentistry" is, to my knowledge, the only work giving any information on the subject. However, the Board of Directors of the college have, quite recently, placed the subject on the curriculum, and now the student on completing his course has, under the lectures of the Hon. David Mills, imbibed the spirit of the legal difficulties with which he may at some unfortunate time be beset.

Dental jurisprudence may be defined, as the science which teaches every branch of dentistry to the purpose and knowledge of the law. In order then to thoroughly understand the subject, a knowledge must be had, on the one hand, of the law and, on the other, of the professional subjects: Anatomy Physiology, Operative Dentistry, Materia Medica, etc. The jurisprudence of dentistry resembles very much that of medicine, with the exception of a few special points which pertain exclusively to the former profession.

The obtaining of the title of L. D. S., grants the holder permission to practice dentistry in all its branches. This legally interpreted means the care of the teeth when sound, their treatment when diseased, and their substitution when lost through any cause. It includes the extraction, filling, replantation, implantation, and transplantation of the teeth, their regulation, the treatment of the gums, alveolar process, antrum and adjacent bone, both by operative and mechanical means. It also includes prescribing for constitutional treatment when such action is necessary in the treatment of abscesses, trigeminal neuralgia, etc. A person therefore must be qualified according to law if he is to pursue the practice of dentistry or he will be doubly liable for damage; firstly, for practicing without a license; secondly, for lack of necessary skill.

According to law a dentist is responsible for his work. When his assistant does not perform the operation prescribed the dentist is responsible if present, but not so if absent. If the patient requests the act of the dentist, such as the extraction of a sound tooth, he assumes the responsibility, but the dentist is responsible as to the manner in which the operation is performed. If the patient is insane the responsibility of the case rests solely with the dentist. The same applies if the dentist uses new instruments or new drugs with which he is comparatively unacquainted. This is a hard rule, but is for the protection of the public and to prevent experiments being performed upon them. Patent nostrums must have a good reputation to be in general favor. When a dentist operates in a manner contrary to any old established opinion he is liable to censure. A dentist is gravely responsible if he operates when he is intoxicated or when he has not the necessary appliances at hand. These are a few of the responsibilities resting upon dentists.

Should a patient bring into court a case against a dentist it would of necessity be for malpractice. This may be defined as improper management of a case, or such treatment as produces injury, or is illegal. From both a dental and legal point of view it may arise from wilfulness, negligence, or ignorance, and subjects the offender to penalties in any of these categories according as error or criminalty is proved.

A case under the head of wilfulness can be entered only when the dentist has expressed malice and an intent to commit wrong.

Negligence may be divided into three degrees:

1. Slight: Where lack of great care and diligence is shown.

2. Ordinary: Where ordinary skill is wanting.

3. Gross: Where total lack of care is shown.

The state of the patient's health makes a difference in the degree of negligence, the law recognizing that more care should be shown a patient in poor than one in good health. A dentist pursuing obsolete methods is held to be negligent. It is of the utmost importance that his instruments be antiseptically clean. Omission of this is a case of negligence of the most inexcusable type. Negligence is due to want of care, want of habit, loss of morals, and indiffence to business. If the patient by ordinary care could have avoided the negligence of the dentist, he can make no case. But if he can establish that he has not been a contributor to the injury, he may proceed to recover damages.

The standard of skill, or ordinary skill, is that which is the result of the acquaintance with the improvements of the day. The standard of skill is supposed to be greater in cities than in towns and villages, owing to the advantages of libraries, the variety of operations, the opportunities for forming societies and attending conventions.

Should the dentist perform an operation, being incompetent, instead of handing it over to some more capable person, he assumes great responsibility. The more difficult the operation, the greater the liability. Should he be lacking in ordinary skill or guilty of negligence or carlessness he is liable.

for damages; but if the patient has not strictly carried out the instructions, the dentist's liability is removed. If ordinary skill is shown, he enjoys immunity. It is difficult to show that the dentist does not possess ordinary skill, as he possesses a license, to obtain which he must have demonstrated that he possessed ordinary skill. Suits therefore must be entered for negligence. Specialists in any branch are doubly liable as from their proclaiming themselves as specialists, the law supposes and expects them to possess more than ordinary skill.

Diligence must always be shown. It is the duty of every operator to bring into play all the skill he possesses, but no more than ordinary skill is required of him unless he be a specialist.

A case for malpractice cannot be brought into court if twelve months have elapsed since the injury was first noticed. Should one be brought against a dentist, if he can prove that he has acted honestly in treating the case, and has not thrust himself in the way of a competent person, he is wholly irresponsible. It is necessary that gross negligence or ignorance be shown. The fact that the dentist had no intent to be negligent does not absolve him, as in the eye of the law the deed shows the intent. Where competent aid may be had, a violent remedy given alone involves criminal responsibility. A consultation relieves the dentist of this.

When sued for malpractice the dentist must give the nature of the case, whether acute or chronic; the state of the case when treatment was commenced; his course of treatment; the treatment called for and the opinion of other practitioners. He should prove that there was no negligence, and, if possible that there was delay in seeking aid. If he can prove that he had made a proper diagnosis and given proper treatment, and that all the trouble was due to unforseen constitutional disturbances, the jury will be influenced by a thoroughly well posted counsel.

The consideration in fixing damages are :

1. The extent of the injury.
2. The pain the patient has undergone.
3. The subsequent effect upon the patient's health.
4. The pecuniary loss to the patient.

Where a patient dies in consequence of injuries from negligence or lack of skill, the amount of damages is not to exceed that which the patient could, if living, earn in three years.

Dentists are in some cases summoned as expert witnesses. Under this heading they are allowed extra fees. A dentist is supposed to keep secret the transactions between himself and his patients. In criminal cases the dentist gives the facts of the case in court without breach of honor. The expert witness is allowed to refer to his memoranda, which need not be in his own handwriting, but may not refer to text-books. He tells what he believes, the ordinary witness what he knows. He should avoid technicalities, making everything clear, and should never express an opinion on any subject with which he is not perfectly familiar or he may get slightly mixed.

In Canada a patient is not liable to pay for a piece of work costing over $40.00 if there is no written agreement, part payment or exchange of some article in lieu of cash. A dentist cannot be compelled to render service to a patient when requested, but when once he has taken charge of a case he must continue his services until the case is completed or he is dismissed. A dentist has a right to charge for time lost by an unfilled appointment. The circumstances of the case and the evidence will influence the decision. He also has the right to retain a set of teeth made by him as security for reasonable charges. This right is waived by parting with them or agreeing to give credit for them. Legally no limit is placed upon dentists' fees. They regulate themselves according to the reputation of the operator, the difficulties of the case, and the circumstances in general.

I have above endeavored to give a *resume* of the law governing us in the practice of our profession. Of necessity much was omitted, but the whole of the subect requires a paper which would necessitate an entire day's reading. I trust that I have presented the subject in a manner that some one may have been able to grasp a few heretofore unknown facts.

ARTICLE IX.

"THE OUTSIDE OF THE PLATTER."

A few weeks ago we called attention in these pages to the prevalent custom, among cheap, advertising, and quack dentists, of using impression compound over and over, going from one mouth to another with it, without making any attempt at sterilization, until every particle of the mass must be thoroughly impregnated with nearly every form of micro-organism mentioned in the records of bacteriology. Furthermore, our attention has been called to the advertisements of several dental manufacturing companies, wherein they offer for sale a soft or "renovating" form of impression compo., for mixing with that which has been used for some time, to improve its plasticity. This certainly seems to indicate that the custom is a general one. Should this supposition prove to be well founded, we shall have a most glaring instance in a habit in our profession of that "cleansing of the outside of the platter," which is mentioned with much scorn in a certain wise old book. The illustration is quite complete, for in one of our most recently received exchanges the sterilization of impression cups is insisted on, but not a word is uttered concerning the sterilization of that which goes into the cup; nor do we recall ever having seen or heard a word written or spoken on this subject.

Is it true that while our journals for the last few years have contained hundreds of articles, giving minute instructions for the sterilization of excavators, scalers, burs, pluggers, forceps, and even engine hand pieces, that the one thing most likely to convey bacteria from one mouth to another has been entirely overlooked? Verily, this is even worse than the custom of the medical man who goes from mouth to mouth with his clinical thermometer. Are we such creatures of habit and fads that we never think, that it never occurs to us to do anything except whatever may be the fashion for the moment? There is material here for much serious reflection. If, as now seems probable, it should be demonstrated that the power of certain bacteria to convert carbohydrates into acid may, like other pathogenic qualities of micro-organisms which have become firmly fixed from extended action and inheritance, persist a considerable time even after change of environment, then may it not be possible to introduce caries-producing bacteria into a healthy mouth, or a more rapidly acting form of the micro-organisms which produce decay of the teeth into mouths where this disease has been progressing but slowly? And if, as is now believed by many—and as one investigator, at least, claims to have demonstrated—it should appear that pyorrhea alveolaris has its specific bacterium, may we not find in this very promiscuous use of impression compo., an explanation of the rapid increase of this baffling disorder? We hope to see our exchanges take this matter up at once and vigorously deal with it. No argument is needed in asking for immediate and concerted action for the discontinuance of a practice which must shock the sense of propriety of all decent people; and, what is of greater importance, must also be gravely dangerous to the health of our patients.—Editorial in The Dentist.

ABOUT PATHOLOGY.—What place is this? This is the Pathological Society. How does one know it is the Pathological Society? You know it by the specimens and smells.

What does that gentleman say? He says he has made a post-mortem. All the gentlemen make post-mortems. They would rather make post-mortems than go to a party.

What is that on a plate? That is a tumor. It is a very large tumor. It weighs one hundred and twelve pounds. The patient weighed eighty-eight pounds. Was the tumor removed from the patient? No, the patient was removed from the tumor. Did they save the patient? No, but they saved the tumor.

What is this in the bottle? It is tape-worm. It is a long tape worm; it is three-quarters of a mile long. Is that much for a tape-worm? It is indeed much for a tape-worm, but not much for the Pathological Society.—Indiana Medical Journal.

Obituary.

W. G. A. BONWILL DEAD.—Dr. W. G. A. Bonwill is dead. In him the profession loses one of its most illustrious men. I lose one of my warmest and most admired friends. It was an advantage to know him and a privilege to be received by him in his home, at all times as I was, as an equal, irrespective of age and personal achievements.

Born in Camden, Del., Oct. 4, 1838, he died in Philadelphia, Sept. 25, 1899. Throughout all the sixty-one years of his life he faithfully lived up to the motto which he wore engraved on his ring:

In Veritate Est Victoria.

And yet in spite of a really affectionate disposition, and a generous willingness at all times to share with his fellows the results of the exercise of his mechanical genius towards the elevation of dentistry, he made enemies, and it was ever pitiful to hear him make such remarks as: "I am proud of the manner in which my native city has disowned me." Yet, though the statement that he made enemies is true, he likewise had innumerable staunch admirers and many real friendships. Among his papers will surely be found a sufficient number of letters of commendation from prominent men throughout the world to have satisfied even Bonwill. It may please the writers of these to know that their written words cheered his declining years and that it was a pleasure to him to read aloud these letters to friends such as I, who might spend a night with him and be willing to sit up into the small hours. And now he has passed to that realm where naught but love resides, and enemies cannot reach him. *Requiescat in pace.*—RODRIGUES OTTOLENGUI, in *Items of Interest.*

Monthly Summary.

COMBINATION FILLINGS.—About fifteen years ago, I began to mix zinc and amalgam in filling teeth, first, mixing the powder and amalgam with the fluid, afterwards using Dr. Spooner's method, as described in August "Items of Interest." I desire to give the result of my experience for the benefit of the profession and not by way of criticism.

My experience with zinc and amalgam mixed together is that the zinc will wear out and leave the amalgam prominent, thus giving a rough surface to the filling.

One-third amalgam and two-thirds zinc will cause a tooth with deep decay to become much discolored, just what we should avoid in the bicuspids or any of the anterior teeth.

It is a good filling to support frail walls, and will wear much better than zinc. If Dr. Spooner will use the zinc and amalgam, and in finishing cover it with some amalgam, he will greatly improve the value of his filling, but will have the discolored tooth nearly or quite as bad as with amalgam.

My experience has led me to mix the zinc and line the cavity well with it, and while plastic press the amalgam into it, clearing the edges so that the zinc will come well to the edge, but so as to be well covered with amalgam. If nicely done, we have no more discoloration than with all zinc. We have the zinc protected from the moisture, and little or no trouble with the edges of our fillings. The zinc becomes a great protection to further decay because of its firmness should moisture pass by the amalgam.—*Items of Interest.*

SIMPLE TEST FOR GOOD PLASTER.—The quality of plaster may be tested by simply squeezing it with the hand. If it cohere slightly and keeps in position after the hand has been gently opened, it is good; but if it falls to pieces immediately, it has been injured.—"British Jour. Den. Sci."

VARNISHING CAVITIES.—Do we not get a more lasting filling of amalgam in a tooth, by first varnishing the cavity with a thin solution of rosin in ether?

My method is to,

1st—Isolate tooth by rubber dam;

2d—Remove all decay.

3d—Sterilize cavity by the drug best indicated for case at hand,

4th—Dry cavity thoroughly with alcohol and hot air;

5th—Varnish cavity with thin solution of rosin in ether;

6th—Carefully remove all of varnish from periphery of cavity.

7th—Pack in amalgam in the usual way.

It seems to me in this way we get a more thoroughly incorporated filling.

It is pretty generally allowed by scientists that ether has great penetrating powers; especially is this true in the canaliculi of the tooth structure. By using the rosin and ether, the canalculi become sealed. The amalgam is now pressed in, and a very intimate relation is established between the tooth and filling which would not take place if the varnish were not used.

I have hesitated to fill teeth in this way, because of having had no advice on the subject. I do not claim this as being an original idea.

Perhaps this method is in general use, but if so, I have never heard of it.

I would be pleased to hear the objections to the method, as I am not prejudiced and only want the best method.—GEORGE W. SOULE, in *Items of Intereet.*

SUCCESSFUL AMPUTATION OF PULP.—Miss B. presented last month a lower first molar for attention. Upon examination, there was a large mesio-occlusal cavity containing the remains of a cement filling. A gold filling was desired.

During the preparation of the tooth, and in ascertaining the condition of the pulp, I removed the cement and found the tooth did not respond to thermal changes, nor did it show a sensitiveness to excavation or other mechanical influences, and, according to patient's statement, the tooth had not given trouble since it was filled, which was about ten years previous, although at, that time it had caused considerable annoyance.

I drilled into pulp chamber without pain and found no odor. Next, I inserted a broach a third of the way into a canal through what appeared to be the pulp. On reaching to this distance. the patient felt a slight pain and I withdrew the broach.

In a few minutes the tooth was filled with blood. I took the pliers and lifted contents from the pulp chamber, which proved to be a pledget of cotton.

The portion of the pulp contained within the chamber had evidently been extirpated, and the portion in the roots preserved alive.

The operation has been performed at an age when it is reasonable to suppose the roots were not fully developed, and when the foramina had not assumed their normal size; but when I removed the balance of the pulp, I found the roots and foramina perfectly normal, and the tooth in a condition to admit of a successful operation.—H. N. LANCASTER, D. D. S., in *Items of Interest.*

CEMENT.—Cement is used a great deal now as a lining under amalgam, when it sometimes serves a triple purpose, protecting the pulp, bracing the walls of the tooth and partial retention. I use it in this way with very great satisfaction. Having given this method some three years' trial, I feel convinced that it is good practice. The qualities necessary for this purpose are the same as for in-lay work. Quickness of setting is especially to be desired. Having coated the cavity walls with the cement, and burnished a layer of amalgam thereon, the cement should set at once to facilitate the removal of the excess from the margin of the cavity, and to prevent oozing around the edges when additional amalgam is added, which is a great annoyance.

In crown and bridge-work the time required for setting is quite a consideration. If a case can be quickly handled, the quicker setting takes place the better, but in some cases it takes a little time to properly adjust a piece of work. Then, of cours, a slower setting material should be used, especially if the weather is warm. For quick work good results may be obtained from Ash's cement, but where much time is required it is better to use something which does no set quickly.—J. W. Bryan, in Western Dental Journal.

"WATERPROOF" CEMENTS.—Inasmuch as the durability of a cement filling depends chiefly upon its power to resist attrition and chemical action, it naturally follows that impermeability to moisture is of the utmost importance. A filling which absorbs saliva becomes softer and will certainly wear away faster than one which does not. I proved this to be a fact by the following test: I used two blocks of cement from the same mixture, one of which after thorough setting was subjected to a water bath for one week, the other block being kept dry meanwhile. Each was then subjected to the abrading action of a rather smooth corundum wheel, against which they were held mechanically with a definite pressure, the wheel running of course, at the same rate of speed in each case. This test was tried with several of the non waterproof cements, and in every case a marked difference was shown in the time required for grinding away under the two different conditions. This variation ranged from 35 to 75 per cent.—J. W. Bryan, in Western Dental Journal.

AN ALKALIN WASH —The acid exhumation from sore gums is a prolific cause of decay in teeth. Such patients should be impressed with the necessity of the constant use of a mouth-wash. An old-time domestic wash is strong sage tea with borax, sweetened with honey.—"Dental Hints."

STEEL WIRE IN THE MOUTH.—One point I would object to particularly in the paper is the use of a retaining appliance, as suggested by the doctor. He mentioned placing a piece of Stubb's steel wire in the open tubes that are on the adjacent teeth to the one moved. I do not think Stubb's steel wire should ever be placed in the mouth, because its susceptibility to oxidation makes it so irritating that the tissues coming in contact with it are always constantly inflamed. Of course, we can overcome that by plating it, but it is difficult to plate steel, because it has first to be subjected to copper plating, then gold plating, and it is not an easy matter to do it. So I take the stand never to place steel in the mouth, because I do not believe there is any indication for it.—H. J. Goslee, in Review.

TO DAM A MOLAR.—To rubber-dam a molar having a grinding surface cavity, and when the dam cannot be forced between the next teeth, affix to the molar a strong clamp and stretch over it and the molar, strong, thick rubber. In most cases the saliva will be dammed out.—Dental Hints.

BROKEN BROACH.—Apply a fifty per cent. solution of sulphuric acid to a broken broach or drill in a root canal. Seal in for three or four day, then inject in the root three per cent. pyrozone, washing out the oxid of the metal. With a fine broach the impacted steel is the usually easily removed.—Dental Hints.

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, DECEMBER, 1899. NO. 8.

Selections.

ARTICLE I.

WHAT PATIENTS SHOULD KNOW.

DR. A. T. BIGELOW, ST. PAUL, MINN.

The closing of the century is memorable for the attempts to right all wrongs, real or imaginary, of an individual, national or international character. There is a trend in the current of thought which marks an epoch that may be productive of benefit to toilers in many weary fields in many lands.

Consonant with human nature the general observation reverts to the special one's immediate surroundings and vocation.

The theme concerns all artists who are ambitious to carve their way to a niche in the temple of fame through sensitive dentine.

Generally, patients think they have the harder lot, possibly not considering that they sit only an hour or two, while the operator is on duty daily from five to seven hours; their trials are the most poignant, our duties on the drop by drop principle, the more wearing.

A glance backward discerns many a worthy brother early fallen by the wayside, and others within our personal knowledge whose jagged appearance shows too well the great nervous strain to which they are daily subjected.

Are not dentists as strong and vigorous at the outset as members of the other professions?

However this may be, is it not a fact that their expectation of life as computed by the experienced actuary is the lowest of all.

It is not a difficult task to seek for the causes which are instrumental in undermining the constitution and abridging life's span.

The chair duties are specially wearisome in long-continued efforts, exposed to the 'unwholesome draught,' the back resembling a spiral, the lateral curvature greatly exaggerated, cramping the spinal cord and great sympathetic, thereby impeding the functions of all the vital organs.

When it is considered that the kindly handling of patients had taxed to the utmost the inventive genius, the strength, and it may be said the life of some of the brightest lights of the profession, is it not time that a treaty of more hearty and complete reciprocity be negotiated with the powers that be at the other end of the instrument?

Could patients possess a better understanding of the proper condition in which to present themselves, and the desired etiquette of the dental chair, it would greatly facilitate the work, elevate the standard and prove a veritable boon to all concerned.

'Tis said, "the age is gone o'er when a man in all things be all." The times demand a separation or division of labor.

Our patrons cannot be expected to evolve from their inner consciousness a correct idea of the duties in the premises, but should look to us as specialists for all requisite information.

The instruction naturally begins with negatives—the things contra-indicated precedent to a sitting. No special characteristics will be noted in chair ordeals peculiar to men except the one that, as a rule, they endure pain less patiently and objurgate more forcibly than women.

In the main the suggestions offered apply equally well to both sexes unless otherwise designated.

Nervous ladies should not make an appointment to be met immediately after a reception, a fashionable "German," or any other trying social or domestic duty, but should so arrange that the date of sitting will find them at their physical best. The condition of mind also is of moment, for any violent emotion or mental perturbation speedily reac and leaves the body in a state of languor and lassitude.

A study to conserve nervous bone in some exceptional cases might be made with advantage.

The athlete, in order to triumph over an antagonist, subjects himself to a severe regimen, daily exercise, and a strict observance of hygienic laws. Caries may be justly considered one of the curses generated by high civilization, and a successful effort to abort the evil consequences a triumph which well repays exertion and self-denial.

The writer has had a good opportunity to note peculiarities of patients in service in several states and one territory, and it may not be amiss to portray a few characteristics which, to the expert, will reveal several species of the genus *un-ideal.*

They may be partially enumerated as follows, viz. :

Every motion made about the chair is regarded with a feline watchfulness. They hold one spell-bound, as it were, like the ancient mariner, "with their glittering eye."

These insist upon a digital as well as optical examination of everything within reach, not excepting the annealed gold. No instrument can be used without a close scrutiny, and anxious inquiries as to the supposed effect of their touch.

These are rich in stock expressions of disapprobation of all instruments and appliances, which they project into the ears of the long-suffering operator at short intervals.

These never remain posed even while an instrument is being changed, and start so suddenly and frequently that all work must be done on the "fly;" both flexors and extensors must be on duty at the same time to prevent accidents, necessitating double tension. This species, fortunately, are not plentiful, but when encountered, draw freely on the contents of the nerve cells of the luckless operator.

These affect a dismal groaning during the preparation of cavity. A strong individuality only saves the dentist from the sensation of gradual loss of identity in that of the accoucheur.

Usually young ladies, who amuse themselves and tantalize you by gazing full into your eyes to see the filling operation mirrored there.

These persist in the retention of a mirror in hand into which they look "many times and oft." Then there are those whom I will charitably not classify, who pretend to be hurt and make a great ado, under the mistaken idea that more care will be exercised, and who then go away and boast of their *finesse* to friends.

In some instances mothers essay to keep a child in lap, and young girls a pet dog in arms, but one must draw the line somewhere, and it may well be drawn at babies and pugs !

One sitting lingers in my remembrance even yet, although it occurred in the good old Bay State about twenty years ago. *She* was unmarried, of somewhat ripe experience, strong-minded, and, as I distinctly remember, *well armed.* The excavation was being proceeded with, a sensitive point she petulantly ejaculated "Oh!" and, by a quick lateral movement, jabbed me in the epigastric region with a sharp elbow. I involuntarily exclaimed "Ah!" The ohs and ahs during that mutually trying operation were as regular as the systole and diastole of our respective throbbing hearts. Therefore my dear old partner, Dr. I., attended to her dental needs, he being better protected than I by adipose tissue at the vulnerable point.

This will suffice for one phase of the subject, and I think all who have been in practice ten years or more will bear witness that the imagination has not been drawn upon for any of these types of the disingenuous, for was it not of this sort that Milton penned the distich for us ?

> "Of their doings great dislike declared,
> And testified against their ways."

Thus far the physical has mostly been considered, but there are other forces, psychic and mesmeric, which, though I do not pretend to explain, are nevertheless felt, and constitute a potent factor in the relations of agent and subject.

If there is solicitude or want of full confidence in the occupant of the chair, it is measurably reflected to the practitioner, who thus labors at a disadvantage, and for this reason first sittings are usually most trying, and should be made short and easy until the principle of cognition is established or temperamental differences adjusted.

The phrase "en rapport," borrowed from mesmerism, admirably expresses this idea. It might be paraphrased and applied to our art after this manner, as the condition or relation in which the patient expresses by word and action a willingness to be subjected to some discomfort, and pain if need be, to effect the desired object.

It is practically true there are some natures so antagonistic, one to another, that the slightest contact is repugnant. When this untuned condition exists the indication is strong to seek professional services in a more harmonious environment.

Too intense sympathy is also opposed to the exhibition of skill. An excellent dentist is known to me, who will not attempt to fill a tooth for his wife—said it was impossible for him to suitably do the work.

Another confessed inability to serve his near relatives, but had no scruples regarding his wife, dryly remarking "that he did not mind hurting her; she was no blood relation,"

A pen portrait of an ideal patron will now be presented. The lady comes promptly, binds her hair with a fillet of lace or veiling, and, if very abundant, lets it down altogether; is habited in a gown that is not injured by a drop of water; retains the pose given in the chair; closes, or partially closes her eyes, and is oblivious to our surroundings.

Given such an opportunity one is at his best, and can produce work, after its kind, as beautiful and enduring as the columns of Karnac or Grecian statuary.

Chair department is a severe touchstone of character and breeding. All the virtues possessed are brought out in relief—patience, resolution, fortitude, consideration for others, and withal the nameless grace with which the tact-person submits to the inevitable.

The reciprocal obligation between the parties in question might be compared to that of active and silent partners in business, equally interested in securing the success of the firm.

The adage, "Trifles make perfection, but perfection is no trifle," is markedly shown in our calling, as success hinges on a series of delicate manipulations, each of which must lead with careful precision to the end. A failure or lack of accuracy at any stage mars the work and vitiates our efforts.

The best dentistry no more than saves poor modern teeth, and any grade less than the best is bad.

It is of moment that our patrons should know and realize to the fullest extent that it matters little how skillfully cavities are filled, by what method or with what material; if the lesions are not on exposed surfaces the teeth must thereafter be kept *scrupulously clean* to secure a good degree of permanency.

Would that this fact could be engraved upon an ivory tablet and placed in every gentleman's pocket and on every lady's chatelaine.

Though the cavity may be hermetically sealed and the tooth theoretically restored to its pristine state, yet the conditions must be made more favorable by care and attention or the same destructive agents will again create havoc, especially in approximal and cervical regions.

Comparatively few of the non-professional have any adequate idea of the injurious consequences of calcic deposits upon the teeth. If it were feasible to show them, in mouths other than their own, the effects of this accumulation, demonstrating that all gum tissue in contact with it is more or less diseased, causing absorption of the alveoli, recession of the gums and consequent loosening of the whole denture, and let them catch the fetor or moldy odor, no second lesson should be needed to convince of the necessity for its frequent and thorough removal.

A glance into the eye-piece of a good microscope with a portion of "tartar" freshly taken from the mouth, on the slide, would afford conclusive evidence of its unwholesomeness.

It is not a pleasing thought to a refined person that a substance be allowed to remain in the oral cavity, which is a habitat for micro organisms.

Dentists still seem derelict in teaching the proper use of the tooth brush to their clintele, with the valuable adjuncts of waxed floss, a good dentifrice and some one of the many excellent antiseptic detergents now deemed indispensable.

It would be invidious to name any particular brush as superior to others, especially if patented with peculiarly shaped bristles, "a hole in the handle and in a yellow box."

If practitioners have not the time or inclination to impart oral instruction in the use of the necessary brush, then by all means give the patient one of the above which comes with the best printed directions extant for the acquirement of the polite art of scientific tooth brushing.

One practice has been made somewhat prominent of late, in a mercantile manner, calculated to deceive the unwary by false hopes of painless operations.

Hypodermic injections of anæsthetizing drugs may be necessitated in certain crisis and exigencies which arise in medical practice, but such procedure is not often advisable or sanctioned by good usage in our specialty.

Neither should powerful obtundents be often employed, for they lower the vitality of the tooth, and in some cases endanger the life of the pulp. I sometimes employ ethyl chloride as a *dernier resort* under sufficient restrictions, with satisfactory results. However, dryness, keen, high-tempered, well adapted instruments deftly handled contain more of promise to patrons, so far as safely minimizing pain is concerned, than all the medicaments of the pharmacopœia.

We are constantly called upon to treat those whose dental organs are in a chronic state of hyperesthesia; for such no rules can be formulated.

To successfully meet these cases one soon arrives at his wit's end, and much needs as a *sustainer* to draw on the peculiar characteristics of some worthies of the past and present, viz., the patience of Job, the skill of Tubal Cain, the finesse of Machiavelli and the all-around excellencies of champion Jeffries.

Young mothers are fortunate if in the care of a physician who, deeply versed in medical lore, has also some slight idea of dentistry. They will be informed that the period of gestation is specially destructive to the dental organs, not only from the liability to resorption of the lime salts, but also from harmful medicines, notably any preparation of iron, acting directly or secondarily upon tooth structure.

It is known that a diet rich in phosphates will, in a measure, prevent the resorptive process, but obstetricians assert that such food tends to solidify the bony framework of the fœtus, thereby increasing the difficulty and danger of parturition.

Here is presented an apparent dilemma in which eminent gynechologists assist us to determine what course to pursus by prescribing *plenty* of *fruit acids* thereby holding the lime salts of the food in solution and insuring a full and natural supply to the mother's circulation for the nourishment of the being *in utero.*

Certain credulities still linger, even among the most intelligent of the laity, notwithstanding the efforts to popularize dental knowledge, and among them none is more common than that once the "nerve is killed" no more pain can be caused by a necrosed tooth. When informed that many of the most aggravated and painful affections least amenable to treatment never occur until after the devitalization of the pulp, the fact is received with surprise, and in not a few instances with a positive admixture of doubt-

One experience of pulp treatment, alveolar abscess or pericementitis, however, usually serves as a spur to make the subject more watchful and heedful in future. The pain connected with the teeth which all, old and young, so much dread, is really a blessing in disguise, for there are scores of people who, but for it, would neglect remedial measures until too late for best results Nature has wisely placed within the dentine sensitive fibrils which, like a semaphore, signal to the sensorium of approaching danger.

Burke, in his essay on the Sublime and Beautiful, defines the difference between pleasure and delight, and avers that the former may arise spontaneously, while freedom from pain constitutes delight.

If our patrons could be fully persuaded to accept this scientific definition given by the eminent statesman and orator, it would greatly encourage them to endure some pain with fortitude, looking forward to an early, satisfactory and delightful termination.—*Items of Interest.*

ARTICLE II.

SOME MYSTERIOUS CASES.

D. W. BARKER, M. D. S., BROOKLYN, N. Y.

The cases described below have occurred during the past few years, and though at the time I thought I could guess at the cause of some of them, the absence of confirmative data in the others has led me to doubt the correctness of my guess.

A lady about forty-five years of age, with the most perfect denture I think I ever saw, consulted me in regard to an abscess, the fistula of which was in the site of the left upper second bicuspid, that tooth having been lost. Exploration failed to find any remains of the bicuspid root and the adjoining teeth were normal. Endeavoring to find the cause I at last concluded that the pulp of the first bicuspid was dead. This diagnosis was made more because of the absence of any other data than anything connected with that particular tooth, though I may add that it was slightly tender. Acting on this diagnosis I started to drill through the crown; the drill had hardly penetrated the enamel when the patient gave evidence that it was unmistakable alive. Of course I drilled no further and no harm had been done by my error. I treated the fistula with the usual remedies for some time, and making no progress I consulted her physician. Having a supersensitive professional science he almost refused to talk about the case, and the utmost satisfaction I could get was the assurance that I "never would cure that abscess." He was right; I did not. The patient subsequently died under circumstances that led me to believe that she had had syphilis, but whether the abscess was caused by the syphilis or the mercurial treatment I never knew.

A widow about sixty years of age presented with considerable swelling and pain over the right superior central and lateral incisors; both teeth were very loose and sore. I diagnosed a dead pulp in the central as that had a filling in it and the lateral was intact. I lanced the gum and pus flowed freely and the swelling subsided in a few days, though the teeth continued loose. A week later I drilled into the central, the teeth being so loose that I incased them in cement to hold them firm. To my surprise I found the pulp alive. I then tested the rest of the teeth with ice and they all showed live pulps. I was puzzled; there was the abscess plain enough, there was no mistake about that, but where was the cause ? In the course of a week a similar though smaller abscess formed on the palatal gum near the first and second molars. A series of questions brought out the following facts : A few weeks before I saw her she had had a similar "sore spot," as she called it, in the roof of the mouth; the teeth had suddenly become loose; there was a profuse flow of saliva and a strong metallic taste in the mouth. Her ordinary health was good. Seventeen years previous she had been dosed with calomel for the purpose of relieving biliary calculus. Recently she had become "run down" in health to the extent that her physician had put her on a treatment of tonics. These facts together with remarks she reported made by the physician at the time caused me to conclude that the mercury administered seventeen years before had lain dormant in her system until a favorable condition for their development arrived and then this train of symptoms suddenly sprung into activity. Could this be true ? In this case I had no reason to suspect the presence of syphilis, and if it was not the mercury what was it ? Although the teeth became a little firmer when the inflammation subsided they never regained their former state of health and I subsequently extracted them when they were so loose as to be easily removed with my fingers; there has been no recurrence of the abscesses so far as I know in the last two years.

A lady of about forty-five years of age complained of severe pain and swelling in the region of the left lower lateral and cuspid; neither tooth had either cavity or filling. An abscess was apparently developing and as the lateral was loose and sore I diagnosed a dead pulp. I started to drill into it and found the pulp alive and ceased drilling. The abscess continued to form in spite of treatment and a day or two later it was lanced. On the subsidence of the acute inflammation the pulp was found to be still alive; my drill, however, had gone too close and it was deemed best to devitalize it, which was done, and the tap hole filled. In this case no history of syphilis or mercurial treatment could be found, though I think such a course of treatment might have been followed and the patient not have been aware of it. The symptoms were exactly those of the other cases and I cannot help thinking had a similar origin. A strange fact is that the abscess disappeared almost as quickly as it came without any treatment, the teeth regained their natural degree of comfort and are still retained.

What was the cause of these mysterious abscesses ? *Quien sabe ?—Items of Interest.*

ARTICLE III.

THE NIAGARA MEETING.

The meeting of the National Dental Association at Niagara Falls was a magnificent success. The attendance was unusually large and moreover the most prominent men throughout the country were present, and the papers were of a high order.

The Omaha meeting having been such a signal failure it is worth our while in view of the future to inquire into the causes which made the very next meeting so great a success. As contributing causes the popularity of Niagara as a place of meeting, and the fact that the meeting occurred nearer to the large metropolitan cities with their great aggregate of dentists, must of course be reckoned. But the chief credit should be awarded to the president, Dr. H. J. Burkhart. It is true that the section officers did their share, but section officers existed prior to the Omaha meeting; indeed, there has been little change in the personnel; it must be conceded therefore that even the energy of these gentlemen was but a reflex of an impetus originating with the president.

It can be stated that within a week of his election Dr. Burkhart had communicated with his friends demanding their assistance and allegiance in making the Niagara meeting successful. Especially did he point out to the New York men that the National Association had conferred upon them an honor in choosing their state as a meeting place and one of their number as their presiding officer, and he insisted that New York should aim to make the meeting memorable. Within a month the president through his personal solicitation had secured the promise of several important papers, including one from Dr. Jenkins, of Dresden, who came across the ocean to fulfil his pledge in person. Hence with due thanks to all others who worked for the meeting, and there were many, the chief praise must be alloted to the retiring president, who fulfilled all his duties so well and gracefully. The Association is also to be congratulated upon choosing Dr. Holly Smith as its next president, his personal popularity as well as his known perseverance and interest in the welfare of the Association which he helped to organize, being such as to give us promise of another good meeting in 1900.

In addition to the National Dental Association there were also the usual annual meetings of the Examiners and Faculties Association, and it is pleasant indeed to record that these two bodies have at last found a means of settling their differences, as elsewhere reported in this number. This is most opportune, as the time is ripe for great strides forward not only in advancing the standard of admission into the colleges, but for bettering the quality of education afforded. The Faculties being no longer troubled by the antagonism of the Examiners will undoubtedly achieve better things in their college management, and the Examiners having ceased to wrangle with the colleges, may perhaps find time to discover a means of unifying the State laws, or at least of giving us interchange of license, by the plan outlined in our July issue, or by any other which would promise practical results and relieve honest, capable dentists from the nuisance of examination whenever they cross a state line.

At least one of the objects for which we have contended recently in our pages seems to have been achieved; that is the abatement of objectionable college advertising. The Faculty Association adopted a rule forbidding a college to advertise in a manner which would be interdicted by the Code of Ethics in the case of an individual practitioner. This resolution will be found in the report of the Faculties Association meeting in this issue. We have received several communications continuing the discussion of the question of college advertising, but we deem it best to let the subject rest, believing that the Faculties Association passed the new rule in good faith. Should any college see fit to defy the Association and make use of such advertising methods, it would be well for the dentists of the locality to collect a few of the advertisements and forward them to the officers of the Faculties Association that they might make an example of the offender.

There is little doubt that the publication of a long and attractive programme of papers, in advance of the meeting did much to bring about the large attendance, and the crowd once present found compensation for disappointment in the meeting of numerous friends and the making of new acquaintances. Nevertheless it is unfortunate that so many prominent men should have prepared papers for this meeting, only to find that there would be no time when they might be read. Moreover it was deplorable that such papers as were read could not be adequately discussed, as often the discussion of a paper much enhances its value, while not infrequently many things are brought out which are more interesting than the original paper.

The chief trouble seems to have been with the rules of order, or at least with the manner of working under the rules. The scheme of section work is ideal, provided the membership in the sections be sufficiently great so that an essayist would feel contented to read his paper before his section, rather than, as now, to feel aggrieved if his paper be not offered to the full body;

If all papers could be presented to the section first, and if each section were limited to the recommendation of a single paper to be made the feature of one session of the main body, there would be abundant time for the full discussion of all papers, while there would be an incentive to authors to do their utmost that their work might be honored as the choice of their section.

This method, however ideal, does not seem very feasible in our National Dental Association because of the small membership in some sections.

As an alternate plan, and one which offers more diversity in the National programme, the following is suggested : All papers should be sent to the appropriate sections. They should be read and recommended in the order of their importance or merit, being numbered accordingly. Then when the sections are called, instead of as now, reading all the papers from a single section before proceeding to the next, only the first paper recommended by the first section should be read, after which the first paper from the second section, to be followed by the first paper from the third section, and so on in order, taking one paper from each section until all had been heard, whereupon, there being time, the first section could be called on for its second paper. If it would seem invidious for the sections to discriminate as to the merits of the various papers, another means would be for the sections to report all papers to the Executive Committee, who should arrange the programme following the rule of not calling a second paper from any other section until each of the other sections should have had opportunity to furnish an essayist.

Under the present system, it is possible for one section to contribute a number of dry papers, monotonously descanting on a single subject or slight variation of it, to the exclusion of more interesting papers, which other sections might have to offer. There is a rule, however (if it is an unwritten rule it should be written as soon as possible), that essayists should not require more than half an hour in which to present their subject; nor should it be permitted to offer a written paper of a length within the limit, and then, having the floor, to occupy an hour or more by the addition of extemporaneous remarks; nor should old matter be introduced in whole or in part, except by special permission, given at the time. This rule was broken in all its parts. Some papers offered could not have been read in less than an hour; some were read which occupied more than half an hour; some essayists added extemporaneous remarks, occupying time which might have been accorded to others, or to discussion, and some papers contained old matter, some of which got before the meeting and some of which did not.

Since the International Tooth Crown Company recently stirred up the dentists of the country by announcing through the Associated Press that under a recent legal decision they would now proceed to collect several millions (or was it billions ?) of dollars, we have received numerous letters asking for information. By way of reply we offer the following extract from a circular letter recently received from Dr. Crouse:

"DEAR DOCTOR: You may or may not have heard of the recent decision which relates to the Low bridge patent. To make sure that the members have a full understanding of what has recently transpired, I will review briefly some of the past litigation.

To begin with, the International Tooth Crown Company had originally secured a decision by the highest court in the southern district of New York, declaring some of the various patents on crowns and bridges valid. With these decisions in their favor, as you may remember, eleven years ago they started through the country securing licenses and collecting royalty, the terms imposed being twenty-five dollars ($25) per year license fee and fifteen per cent. on all work done. Those signing a license agreed thereby to the validity of some thirty-eight different patents which the Crown Company had secured on various devices.

At this stage of the proceedings the Protective Association was organized and within six weeks it had stopped the Crown Company from enforcing their patent claims. The Association drove them from one court to another, they withdrawing and paying costs rather than make a test case, until they reached the Federal district in which they had previously obtained their favorable decision. It was here that the Protective Association succeeded in having the former decision of these courts reversed and the Low bridge patent declared invalid; first before the Federal judge in the Circuit Court, and afterward in the United States Court of Appeals. This supposedly to all intents and purposes ended the litigation with the Crown Company.

In the meantime the International Tooth Crown Company had reorganized and secured in their company individuals of large means, and their efforts were being exerted to get a reversal of our decision, on the ground that they had had a favorable decision on their patents at one time, and at the second contest they had been reversed, and so they were entitled to a third hearing. We have known all this and have been pleading, wherever we could get in communication with the members, that this action was being taken by the Crown Company, and we predicted that just the results that have taken place would transpire, namely, that the Crown Company would get a decision in their favor because there was no adequate defense being made. Bear in mind, the defendant was a relative of persons connected with the Crown Company, and not a member of our Association; therefore *the Protective Association has not been represented in any way in the recent suit.* I knew of this action on the part of the Crown Company through some of the former witnesses who had been asked to testify a second time, and especially through personal interviews with the individuals who have recently invested money with the Crown Company, as they wished to know what the position of the Association would be in case of their winning this suit.

They have had their decision by Judge Townsend, which was rendered July 31, 1899, and which practically overrules or reverses the former decision, which declared the patent invalid. With this in their favor the International Tooth Crown Company are already commencing suits and sending communications to the members of the profession, a copy of one of which we append herewith :

WILLARD A. MITCHELL,
COUNSELOR AT LAW,
35 Nassau St.
Telephone 5409 Cortlandt.

NEW YORK, August 5, 1899.

DR. ——————————

DEAR SIR : After several years of litigation, the James E. Low patent (No. 238,940), owned by the International Tooth Crown Company, of this city, has been finally sustained, and the right of said company established to an accounting from all dentists who have been making the Low or so-called "Richmond" bridge.

In corroboration of such information in the matter as has already been furnished by the public press, your attention is invited to the opinion by Judge Townsend in the case of the International Tooth Crown Company vs. Kyle filed in the office of the Clerk of the United States Circuit Court, in this city, on July 31, 1899. Copies of this opinion may be had upon application to this office.

I have been instructed by the said International Tooth Crown Company to prepare and return to it before the end of this month two separate lists of names of the dentists who have not yet settled and who are known to have done work infringing upon said patent; one list to contain the names of those who should be treated with courtesy, and with whom a liberal and amicable adjustment should be made, the other to contain the names of those who fail to respond to my communication or whose replies are unsatisfactory.

I have also been instructed not to institute any legal proceedings involving costs or other expense to defendants until an opportunity has been afforded to respond to this letter by filling in and returning the blank herewith enclosed.

Requesting the favor of an early reply, I am, very truly yours,

WILLARD A. MITCHELL,
Attorney for the International Tooth Crown Company.

This is the blank referred to:

——————————1899.

WILLARD A. MITCHELL, ESQ.,
Attorney for the Int. Tooth Crown Co.,
35 Nassau St., N. Y. City.

DEAR SIR: I elect to settle my indebtedness to the

International Tooth Crown Company for infringement of its patents covering the Low or "Richmond" bridge work upon the basis of the usual license fee, amounting to $25 for each year in which such work was done by me between March 15. 1881, and March 15, 1898, together with a royalty of 15 per cent. on all accounts collected by me for such work between said dates, provided my statement of the amount due is accepted by said company, and provided a discount of 25 per cent, is allowed me by said company for a cash settlement. For the purposes of such an adjustment, and without admitting, except for the purposes of such settlement, that I am indebted in any amount whatever, I state and represent that the total license fee to which said company would be entitled from me during said period, after deducting any amounts which I may have paid for royalties and license fees, does not, to the best of my information and belief, exceed the sum of $, and that the total amount of royalty doos not exceed the sum of $, and I hereby offer to adjust my indebtedness to the International Tooth Crown Company by the payment of 75 per cent ef said sums

(Signed)————————

Now, Doctor, the war is on and prompt action is necessary. Heretofore the benefits of the Association have earned to members and non-members alike. The nature of the litigation was such that this could not be very well avoided, that is. the members of the Protective Association have borne all the expenses of the litigation, and while this has not been an enormous burden, since it did not amount to over a dollar a year to each member, nevertheless it was unfair to the members of the Association. Now the litigation takes a different form, and after discussing the whole question very carefully with our attorneys we have decided to protect only the members in good standing who have paid their assessment, and those who do not unite with the Association must take care of themselves. The form that this litigation will assume now will be much more troublesome, involving even more care and responsibility on my part than the former litigation, and I take on this work again very unwillingly and only from a sense of duty, as I can ill afford to neglect my practice, which is my only source of income, to give the time necessary for these additional duties. I do so only with the distinct understanding that the members stand by me, in which case they need have no fear of being compelled to pay royalty. That the Crown Company will collect millions of dollars from the dental profession we have no doubt, but let it be from those who do not come in with us.

The object of this letter is to ask you to send your ten dollars due on the assessment, and we think it hardly necessary to emphasize the need of a prompt response. Make no mistake—when I state that we can protect the members I do so advisably. If the Crown Company make any demands upon you, state that you are a member and refer them to me.

Please let me hear from you by return mail.

Yours very truly,
J. N. CROUSE,
Chairman Dental Protective Association,
2231 Prairie Ave, Chicago."

It has been announced that new members will be received into the Protective Association upon payment of $20, and these new members will be protected.—ED. in *Items of Interest*.

ARTICLE IV.

A PLEA FOR THE PRESERVATION OF THE NATURAL TEETH.

C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

It would appear to be the manifest duty of every man, in whatsoever station in life his lot be cast, to aim at the accomplishment of that which will result in the greatest possible good to the community in which he labors. More especially would this seem to be true in the case of those entrusted with the health and morals of their fellowman. A merchant may sell his customer a defective piece of goods and thereby stamp himself a dishonest man, but the real evil of such a procedure eventually falls upon the individual who perpetrates the wrong rather than upon the one who is wronged. A dealer in horses may misrepresent the soundness of an animal and complacently claim that it is merely one of the "tricks of the trade." Both the merchant and the horse dealer are offenders against the morals of the community, and are to that extent bad citizens, but the issue of their misdemeanors is more or less restricted and not in the broadest sense a serious menace to the welfare of the commonwealth.

Not so with the transgressor in certain other walks of life. The man who has in his keeping the physical well-being of the people cannot be lax in his methods without setting in motion a train of evils, the consequences of which may work havoc in generations yet to come. The duties of the professional man assume a more exalted bearing and hold a closer relationship with grave responsibilities than those engaged in the marts of trade.

These considerations are suggested in studying our present status of accomplishment in the practice of dentistry. Are we doing as much as we might do for the welfare of humanity? We are advancing rapidly in the mechanical perfection of our art, and are supposed to be a most progressive profession, but in the broader sense of a high moral purpose, are we living up to our greatest possibilities? In one respect at least I am constrained to believe that the true answer must be in the negative.

It will probably be admitted by all that the greatest possible service the dental profession can render humanity is to preserve the natural teeth in a state of health and usefulness. Is the profession doing this to the full extent of its capabilities? For answer I ask you to study the mouths of the people on our public thoroughfares or in an average assemblage of average citizens. In too many instances we see the mouth in its artificial environment marring the features of otherwise intelligent and beautiful individuals.

While this may not be directly construed as a reflection on the dental profession in all instances, yet if the matter be sifted to its legitimate source it will be found that at bottom the profession is most responsible for it.

A people are largely influenced by the trend of thought followed by their professional advisers. One of the main offices of a professional man is to educate the community to the highest and best of which his profession is capable, and as an evidence that this may be successfully accomplished, we see material differences in the existing state of the teeth in different communities. In some localities we find the mouths well cared for and the natural teeth for the most part reserved, while in others the teeth are allowed to run riot and give way to artificial substitutes without number. And it is just at this stage of the present paper that I wish to begin to particularize. My purpose in bringing this subject before the dentists of Ontario is fostered by the fact that within the range of my experience I see more artificial teeth according to population worn in Ontario than in any other place I have ever visited. Lest there may appear to be a shade of provincial prejudice in such a statement, I hasten to add that I was formerly a practitioner in this fair Province myself, and am free to acknowledge that in all probability while here I put in my full quota of ill advised and inharmonious artificial teeth. For this species of mild malpractice I am impelled even at this late date to offer my humble apologies to the people, and to the profession whose standard I to that extent degraded

And yet, in my most magnanimous mood I cannot quite bring myself to admit that in those days there was anything like the slaughter of natural teeth that we see today. I can vividly recall my own early efforts to educate the people ih the care and preservation of the natural teeth, and while, as just admitted, I did not do all that I should have done in that direction, yet I feel that even in those days I accomplished something for the good of the people and the profession. It may be claimed that there was then a larger opportunity for doing good, with a smaller measure of discouragement than there is to day. Dental offices did not exist in departmental stores, and the day of the full-fledged five dollar-a-set man had not yet arrived. But the greater the necessity the more earnest should be the effort.

And this leads me logically into the consideration of some of the causes which have brought about the present status of dental practice in the Province. I have said that I see more artificial teeth worn here than anywhere else. I certainly see more young people with artificial teeth or defective natural ones than in any community I have ever visited. In encountering this wholesale exhibition of chinaware I have been led to look into the reasons for such a condition of things. Of course it may be stated on general principles that the prime factor in the case is a lack of knowledge on the part of the masses as to the real value of the natural organs, and the necessity for preserving them in a state of health. In the minds of the people there is not a distinction between the serviceability of a perfect set of natural teeth and a set made by the dentist. This lack of education is often attributed to a fundamental obtuseness on the part of the community, and I have noted that a great many dentists, when taken to task for allowing such a state of affairs, take refuge behind the assertion that it is impossible to educate their patrons up to a proper appreciation of the highest class of dental service.

It is probably true that certain communities are more difficult to educate than others, and that in some instances it is uphill work to attempt a reform. But I hold to the conviction that the duty of the dentist never stops short of an honest and persistent effort to enlighten the people who come under his care, no matter what their station in life. This effort must not consist merely in spasmodic and occasional dissertations presented in a half-hearted way, and lacking the force of conviction on their face. But it should be a living and abiding faith held sacred by the tenets of professional and humanitarian responsibility, and should constitute itself a feature of every-day practice to be pursued as conscientiously as any other part of office routine.

The dentist who has the welfare of his patients and his profession sincerely at heart will never deem it too much trouble to enter into explanations and offer painstaking advice to even his lowliest patron. His efforts may all too often fall on an unrequiting soil, and he may meet with countless rebuffs and discouragements, but in the end, with daily endeavor, he will see the happy results of his sowing, and if he does not succeed in leavening the whole lump, he will at least immeasurably raise the status of dental practice in his community.

There are many methods of interesting people in these matters, and the dentist must employ tact in his management of the different classes which come under his care. It will not suffice simply to make an unvarnished statement to the effect that the natural teeth are better than artificial ones. The lessons must be driven home by a quickwitted grasp of the situation, and an attack on any vulnerable point the patient may present. No two people can be managed precisely alike. As a practical illustration to rivet attention in certain cases, let me suggest a line of argument something like the following: Suppose your patient assumes—as patients sometimes are prone to do—that a set of artificial teeth answers every purpose, and that it is therefore not worth while striving to save the natural ones. If you ask that patient to admit that perfect mastication is neccessary to the most perfect health, he will usually agree with the proposition, because this is a generally recognized fact among all classes. The admission will likely be accompanied, however, with the statement that people are able to masticate with artificial teeth. Then is the time you have your patient at your mercy. You can go at him with cold facts in such array that he must retreat crestfallen from the controversy. Tell him that experimentation has shown, that when the natural teeth are in good condition the jaws are capable of closing with a force reaching in some instances to nearly, or quite, 300 pounds; that the average individual can exert more than 100 pounds pressure with the natural teeth; and that to properly masticate ordinary beefsteak it is necessary to use at least seventy or eighty pounds—to say nothing of the extraordinary article so often palmed off on a long-suffering public. Then ask him how many of his friends wearing artificial teeth are able to exert seventy pounds pressure with them? He will begin to take on a helpless look by this time, and you can clinch your argument by saying that the average force exerted by artificial teeth runs along about fifteen or twenty pounds. Tell him that artificial teeth would be smashed to smithereens as fast as they could be inserted if it were possible to use them as the natural teeth are used. Such a presentation of the subject will at least cause your patient some reflection, and start him thinking on a problem that never before entered his mind. I might also add that this form of reasoning may not be altogether lacking in moral features with a great many of our dental friends themselver.

The dentist owes it to his patients to study up ingenuous methods of argument to gain his point in their general enlightenment, and the man who devotes himself conscientiously to the better education of his patients will reap not only the reward of an appreciative *clientele*, but in the end will receive material recompense in a higher remuneration for his services.

But to return to the previous question. The universal use of artificial teeth must not altogether be laid at the door of ignorance. In latter years, when the stress of financial depression has pinched the people on every hand, the question of cost has had its influence. It has, in many cases, been cheaper to fill the mouth with porcelain than to preserve enemal and dentine. This is one of the abominations of low-grade dentistry. Not that it is a misfortune to have the poor man readily supplied with artificial substitutes at nominal cost when the natural teeth are irretrievably gone, but that the low price of artificial teeth has resulted in the sacrifice of innumerable natural teeth that would otherwise have been preserved. I have heard an eminent dentist make the statement, that it would have been better for the people and the profession, if artificial teeth had always been ten times the prevailing price.

But, after all these considerations are stated, I am strongly inclined to the belief that the greatest of all causes leading to the wholesale use of imported chinaware in the mouths of our patrons has yet to be mentioned. I may be treading on delicate ground, but I take the step boldly because I believe my impression to be correct. It is my conviction that much of the indifference manifested by the people in regard to saving the natural teeth is born of the fact, that failure has too often followed an honest attempt on their part to save them. In other words, our profession has not lived up to the highest possibilities of the science and art of dentistry as applied to preservation of the natural teeth. Patients have their teeth filled and pay for it, only to find in a few years—sometimes in a few months—sometimes even in a few weeks, the work undone, and the last condition of that mouth worse than the first. It requires not many experiences of this kind to foster the idea that teeth cannot be saved, and that the practice of filling them is a delusion and a snare. I have heard this argument used many and many a time by people who referred to their own experience as proof. This brings us squarely face to face with the question as to the probable permanency of fillings when properly inserted. Is it by virtue of necessity that so many fillings fail after a limited service? Must we acknowledge that with all our boasted handicraft we are able to accomplish nothing but the most temporary results in our operations? A few years ago a practitioner published a statement wherein he sought to prove by tabulated records, that the average duration of a gold filling was only about three years; and I very well remember a good friend of mine getting up in a meeting shortly after and claiming that he thought the estimate too high. I rebelled strenuously against such an assertion at the time, and, to-day, I rebel more than even, in the light of a careful study of my own records, after a continuous practice in one place of more than twelve years. I want to say to you gentlemen, in all sincerity, and with nothing but the most modest opinion of my own ability as an operator, that if I was not thoroughly convinced, that every day of my practice I was inserting fillings that would do service for ten, fifteen, twenty years—in fact, for the future lifetime of the patient, I should feel a sense of humiliation and defeat sufficient to stamp me in my own estimation as a failure among my fellow men. That this is no idle boast, and that I am not alone in the conviction, I give you the sentiments of two men of integrity in the profession, both modest and reliable, both carefully studious of their records, and each having practiced in his respective locality between thirty and forty years. One of them is now dead, the other living. One said to me, when questioned on the subject, after due deliberation and a modest estimate of his work—he was, in reality, one of the most modest men I ever knew—that, "with a conservative statement, he could claim for his gold fillings an average service of at least fifteen years." That may appear astounding, and even ridiculous to those who did not know this man, and who are viewing every day the work of the average operator, but I knew him well enough to be assured of his sincerity in making the statement, and I have seen sufficient of his work to convince me that he was not over sanguine in his estimate.

The other man, in discussing this subject with me on one occasion, made the assertion that, "with the exception of those occasional cases, where there seems to be an intensely active tendency to caries, that gold fillings inserted under favorable conditions, and with a full observance of the most approved principles, will last practically a lifetime.

Here we have in these two examples an inspiration toward the accomplishment of all that is greatest and best in our profession, and these men, with others of their ilk, have stamped the seal of professional stability on the records of the past, and pointed out the future possibilities of the highest class of dental service.

The chief difficulty with the average practitioner of dentististry is, that, in his daily work, he does not look carefully enough into the relation of cause and effect. He sees that a filling has failed in a tooth, but he does not stop to study the reason for that particular failure. He knows that, in one case a filling will do good service, where in another, with apparently equal care and similar conditions, his work seems to go for naught. His usual explanation is, that "in the one case, he is dealing with 'hard teeth,' and in the other, with 'soft teeth,' " but recent investigation has proved that there is little intrinsic difference in the structure of teeth of different individuals, and that even where there is a slight variation it seems to have little or no effect on the carious process. The fact is that we must cease hedging ourselves behind this story of "soft teeth," and must no longer offer it as an excuse for the failure of our operation. There are other causes at work which render it more difficult to save some teeth than others—causes which require careful study, but which cannot be considered in the present paper. Incidentally, however, it may be proper to state that the question is one of immunity from caries, or susceptibility to caries, much the same as we find immunity or susceptibility in other diseases. And, while on this subject, let me pause long enough to call attention to one feature in connection with it which seems to me to be of paramount interest, and to offer us the greatest possible encouragement in the management of those especially difficult cases, where the process of decay seems so rampant as to dishearten the most persistent and painstaking operator. Clinical experience goes to prove that in the vast majority of patients this intense susceptibility to caries is seldom constant. In other words we may find in one of our young patients the teeth breaking down at an alarming rate. Decay recurs around fillings in a discouraging manner, and new cavities crop out on all sides. Usually a case like this is given up as hopeless and the teeth sacrificed, but if the operator will only have the courage and patience to vigorously fight back the outbreak, he will find in nine cases out of ten, that, when least expected, there will be a change in the susceptibility, and the carious process will practically cease. I have seen this occur so often that I am no longer daunted when the worst possible case presents itself, and I am the more encouraged to go on and do the best I can for my patients, in view of the experience of an old and reliable practitioner, who recently stated to me, that in all his career he had not met a dozen cases where the carious process had been continuously persistent. We owe it to our patients to take these cases vigorously in hand and do the best for hem that the most advanced teaching will permit us.

But there is still another feature of this matter relating to the failure of fillings that I wish briefly to touch upon. I have said that the average practitioner does not study closely enough the relation of cause and effect when a filling fails. How many operators carefully consider why it is that a certain filling in a molar, or bicuspid, for instance, is forced out of place in a few months, when another filling anchored in precisely the same way remains secure for years? Did it ever occur to you that the force of mastication differs greatly in different individuals, and that in the one instance there was double the amount of pressure exerted on the filling to dislodge it that there was in the other? I have just stated that some individuals are able to close the jaws with a force of 300 pounds. Others, even with their natural teeth, can scarcely reach half that amount, while it has been learned that in the natural process of mastication there is the widest variation in the force exerted. Would any intelligent man expect to anchor a filling in a mouth where there was the maximum force in the same way that he would where there was the minimum force and expect it to remain equally well? And yet dentists every day are inserting fillings without the slightest reference to the stress which is likely to come upon them. I commend a study of this matter to the members of the Ontario Society, with the belief that they shall thereby proceed more intelligently in the anchorage of their fillings.

If dentists would develop definite modes of thought, and would carefully search out the causes of each failure that presents itself so as to avoid a repetition in the future, it would soon immeasureably increase their usefulness and add materially to the permanency of their operations. It would then not be long before the people would appreciate the benefits of dental science, and the hue and cry of to-day which seems to have for its watchword, "artificial teeth forever and everywhere," would give way to a proper respect for the natural organs, and would place dentistry in a more honorable light before the world.

I have written already too long, but, if time permitted, I should like to go more fully into the details of what I conceive to be a growing evil—the present defilement of the human face divine. What shall the dentist of the present have to answer for when, in a half century hence, the results of his mad havoc of to-day shall have left their indelible mark on the physiognomy of the nation? We are making for good or ill in all we do, not only for the present, but for future generations; and it is meet for us, that we so discharge our bounden duty, that posterity, instead of heaping maledictions on us for the disfigurement we have wrought, may find it in their heart of hearts to rise up and call us blessed.—*Dominion Dental Journal.*

ARTICLE V.

THREE VITAL SUBJECTS.

LIN. C. SHECUT, D. D. S., AUGUSTA, GA.

Just lately, in the editorial columns of a dental journal the writer says: "For years we have held the opinion that a young man should not be encouraged by dentists to study dentistry, unless he has had a good preparatory literary education and has money enough to pay his way through college and "set himself up after graduation." This article brought to my mind the fact, that our journals have been teeming with writings relative to the requirements for entrance into the dental schools of this country; in our associations law upon law have been enacted, only to become "dead-letter" laws; the faculties of our colleges separately, and combined, have discussed it again and again only to return to their schools and entrust their sacred agreement to the fidelity and tender care of a grasping Dean, whose first question in his entrance examination is: "Have you the five dollars matriculation fee?" This being satisfactorily answered he puts his second and last. "When can you pay the tuition fee? In short, the profession in general has taken this as a topic ever ready for the literatures pen or the forensic fray. And what have we accomplished? Every year men are graduated from our colleges who are conspicuously deficient in the requirements of an elementary education. These men may do great good in their sphere, but they would have been capable of greater good to humanity, if it had been acquired that their attainments be greater. Still, on the other hand we find many with gifted faculties and cultivated mind; as fruitless as the barren fig-tree, when we consider their professional worth. And when thus we view the two, it would not take us long to decide which were the better filling his little "niche" in the world, and more deserving the help of the profession. One man making his one talent count, the other burying his five. Just so, we see how impossible it is for colleges to make men, and how easy for the spirit of the law to be perverted. Never-the-less, we agree with the editor on the question of preparatory literary education. But when he says "a young man should not start in dentistry unless he has money enough to pay his way through college and set himself up after graduation," we would beg to emphatically offer our objection. I will venture the statement, without fear of contradiction, that our best professional men to-day, are those who struggled, labored, and plodded between sessions, so that they might return the next. It is a notable fact, that our greatest minds have had their noblest thoughts burned into them by flickering candles and pine wood knots in attic rooms, and on cabin floors. Our illustrious men have been nutured in adversity's lap, and our genuises raised by the hand of poverty.

Let the young man plow the fields or strike at the forge, between sessions, if he feels that dentistry is his life-work, and this is the only way for him to get it. Don't discourage him, rather lend him a helping hand. Have confidence in him, and he will not disappoint you. So, one part of the article is good; the other I think goes to the extreme. And it strikingly shows us the strength and rapidity of a fast flowing current of human minds bent in one direction, and how easily they may run to an extreme that was not intended.

It should also serve as a reminder of our relationship and responsibility to the young men seeking our advice. How close is this relationship and how heavily does the responsibility rest on our shoulders. For after all, what are our professional relations but an intensified form of our relation man to man. In our days we hear so much and see so little of ethics. Our minds are muddled, we are un-uncertain and often ask "are there any ethical among us?" The natural laws that show us our duties to each other are simple and plain, and how far short of the true purposes does a man-made code fall. Many, often have the mistaken idea, that our laws are chiefly to regulate each other; to hold each other in obeyance and lose sight of the fact that they are made for the protection and benefit of humanity.

We should keep it clear in our minds that we are distinctly medical specialists, and that in our places, we have as great responsibility and owe as much to our fellows, as any other class. We must not allow the glittering gold and fine material necessary for our work, lead people to believe that our science has degenerated into an art, pursued mainly for pecuniary gain; but we must so act towards them and towards each other that the fact of our unselfish intent and noble purpose will be self-evident. In doing this, we should go beyond any arbitrary code, and must comprehend "that which is the most beautiful truth in morals, and that is: we are all dependently related." Where would you look for the man who is independent of his fellows? Is not greatness attained by serving? And are not those greatest that serve most? Our increased endowments, our extraordinary faculties, only lay upon us a greater weight of debt to others. We have no such thing as distinct or divided interests from our race. The Divine economy has it written—any evil that we practice or detriment that we work to our fellow man, will surely be revisited upon us, and poured upon our heads as coals of fire, even falling upon our children for generations to come. This of itself it seems would be sufficient to stop man in his stubbornness. But how much better to view the subject from the true and higher plane, where we do a thing, not through policy or fear of retribution, but from a love of the good and a desire for the right. Some one has beautifully put it that: "If we will but choose the broadest paths for the happiness of others, we unconsciously mark out our path through peace, prosperity and happiness." When God created man he manifestly put him here for his happiness. But man upset the plan, and so we have the world today, a mingled cup of sweet and bitter, and we add to this cup our share of the one or the other, just as we live for self or for our brother.

Often in casting about to find what we owe each to the other, we become tangled and confused with too much reasoning, and lose sight of the way that nature shows us; which is, in itself so simple, that we practice it unconsciously, and pervert it only as we will to do wrong. Look to our own bodies, and see how the organs have to work in sympathy with every other part, even to the minutest cell chamber, and just as the molecular disturbance in any one of these cells will cause confusion in some part, which, if not checked and righted, may lead to the destruction of the whole; just so is man the unit in the design of the universe, and the disturbance that he brings about will be felt in all those directions that his influence extends; and humanity will be lowered, and he receive his reward proportionately. Contemplate any of the wonderful workings of nature, even from the smallest of its making to those that seem as if they are separate words in themselves, and we find that each lives only by the help of its neighbor. They flourish only through God's universal law of dependent relation. From lowest life to highest, the silver cord runs, holding every part of creation in unison. Men realize this, why do they not live it? If we did, this old world would become as a grand symphony of songs, and life as the summer flight of a bird. Although it would be vain to look for this grand consummation here; still, it falls heavily upon every one, especially those striving for the higher plane of living, to look to this end. Doing so, life would be brighter and living sweeter. In every corner we would find concord, harmony and love. We would know, and live, natures ethics. Truly, "the world is what we make it." And in our sphere, be it far reaching or limited, we can approach this high ideal, if we will but strive.

ARTICLE VI.

THE WISCONSIN DECISION.

Those who have carefully read our last issue must have been convinced that the policy of this magazine is to view all dental questions without favor or favoritism. In the past, at times, because we have expressed the view that the Examiners rather than the Faculties, were in the right, some have thought that Items of Interest was an "organ" of the Examiners Association. Nothing could be farther from the truth. In our July number we gave place to an article accusing the Illinois Board of Examiners of irregular practices. This does not mean, however, that we assume all the charges to be true. Our publication of the matter is rather in the nature of the finding of an indictment by a Grand Jury, an act which does not assert that there is guilt, but that there is evidence against the accused which in his own interest must be refuted before he can be counted innocent. The rumors from Illinois are of such a nature that the good name of dentistry demands an investigation, and we trust that after the Niagara meetings they will be hushed finally.

We come now to a discussion of the so-called Wisconsin decision, in a dispassionate, impartial manner, in the hope of determining how much or how little it affects the dental laws of the whole country. In certain quarters the decision has been welcomed and the conclusion advanced that the Judge's opinion negatively settles the question whether or not an Examining Board may determine as to the status and reputability of the colleges. But does it?

It seems safe to assert that it does not. All that was before the Court for consideration was the powers of the *Wisconsin* Board, as defined by a *Wisconsin* statue, and a close study of the decision shows that all that is decided (or claimed to be decided) is that the powers of this particular board are not as great as the Board claimed. This opinion is not even final in Wisconsin, the case as yet not having been tried. The Judge's opinion, however, seems so sound that there is little reason to believe that it would be overturned by a higher court, although it is evident that he must have had a very foggy notion of certain phases of the questions at issue, for he tells us that the Board in effect demanded that to be counted reputable, colleges must teach Latin and Mathematics, and a *reductio ad absurdum* argument declares that if this power were granted the Board might in the future demand a course in Chinese or Hindoo.

In considering the bearing of this decision upon boards in other states we must study the statue, and before it could be claimed that the opinion could serve as a legal precedent, it would be needful to show a likeness between this particular statute and those of other states. It will be instructive to do this, and for comparison we select the law of California; first, because of its seeming similarity; and, second, because of the quite opposite decision of the California Supreme Court, a decision which it seems to have been convenient for some to forget.

We give the two laws, and italicize the lines which make them so different that opposite judicial decisions have resulted.

"Any person who may desire such a license, may appear before the State Board of Dental Examiners at any regular meeting and be examined with reference to his knowledge and skill in dental surgery; if such examination shall be satisfactory the Board shall issue a license to practice dentistry; provided that the Board *shall license without examination*, upon the payment of one dollar, *any regular graduate of an incorporated and reputable dental college* which requires that the candidate for graduation shall attend two full courses of lectures of five months each, the last of which courses shall be attended in the college which issues the diploma."

"Any and all persons who shall so desire may appear before said Board at any of its regular meetings, and be examined with reference to their knowledge and skill in dental surgery, and if the examinations of any such person or persons shall prove satisfactory to said Board, the Board of Examiners shall issue to such persons as they shall find to possess the requisite qualifications, a certificate to that effect in accordance with the provisions of this act. Said Board shall also indorse as satisfactory diplomas from any reputable dental college, *when satisfied of the character of such institution* upon the holder furnishing evidence *satisfactory to the Board* of his or her right to the same, and shall issue certificates to that effect within ten days after."

In the Wisconsin case the Board claimed that the legislature had clothed them with power to decide as to the reputability of the colleges. The whole question turned on this single point, and the Judge found that the legislature gave the Board no such power. Nor does it seem to require much legal acumen to arrive at the same view. The language of the statute seems simple. It directs the Board to license graduates of reputable schools. This is *mandatory*. Should the Board reject a graduate, claiming that his school lacked reputability, and should the rejected candidate take issue with the Board, the reputability of the school would become a question of fact upon which the court could rightfully hear evidence; this because there is nothing in the statute of *Wisconsin* which authorizes the Board to decide what is or is not reputable. The whole argument of the Judge in his opinion is upon this point, and it was because, in his view, the reputability of the Chicago College was a long established and recognized fact that he decided against the Board. It is worthy of note that the statute does give the Board certain supervisory powers. The Judge declares that the Board could not direct the College to demand certain educational standards of admission, and he is right because the statute is silent on this point. But he would certainly have decided that the Board could demand that the college should have "two full courses of five months each," because the statute specifically empowers the Board to do this.

Thus we find that the Wisconsin decision does not establish a principle of equity, but merely a point of statute law. The Board claimed certain discretionary powers, and the Judge decides that the statute does not bequeath such powers. That is absolutely all that the Wisconsin decision decides, and the effect of the decision is limited to Wisconsin, and can only effect such states as have the same language in their statutes.

The language of the California law is very similar, but in regard to the reputability of colleges we find here the significant phrase, "*when satisfied of the character of such institution.*" Thus the California Board is made the final arbiter of the reputability of colleges sending candidates to it for license, and this power being granted by statute, the Supreme Court has decided that the court has no supervision over the Board on this point. Throughout his opinion the California Judge repeatedly quotes the statute to maintain his view that everything must be *satisfactory* to the Board. Had the farmers of the Wisconsin law inserted such a saving clause there is no doubt that the same Judge who decided against them would have decided in the favor.

Apparently (the decision of the Supreme Court of California sustaining this view), a state may enact police regulations defining who shall or who shall not practice a profession within its borders, and as a part of such requirement it may demand not alone certain educational attainments determinable by examination, but may go further and relieve its examiners of some of their labor by extracting that licentiates must come from colleges requiring specified knowledge as a preliminary to matriculation. Where such provision does not appear in the statute, of course the Board cannot exercise any such powers. As the Wisconsin Board appear to have exceeded their law they were "thrown out of court."—*Editorial in Items of Interest.*

ARTICLE VII.

PAINLESS DENTISTRY.

Dr. Clyde Payne has certainly contributed two valuable formulas towards "Painless Dentistry." He claims even better results for the painless excavation of "Sensitive Dentine," with his Obtundent, that with "Cataphoresis." *His Obtundent* is made of carbonate of potassium, glycerine, cocaine and carbolic acid. He makes a saturated solution of carbonate of potassium and glycerine, then a saturated solution of cocaine and carbolic acid. He mixes the two solutions on a warm glass slab. A flat bottle filled with hot water forms a good slab. The rubber dam is applied and the cavity is made as dry as possible by means of absorbent Japanese bibulous paper, absolute alcohol and hot blasts of air with the hot air syringe. A drop of the mixture is now placed in the cavity and the hot air blown on it as warm as the patient can bear. This is kept up for five minutes, after which the tooth can be excavated quite painlessly.

For the painless extraction of the teeth he has compounded the following "*Local Anæsthetic*:" Cocaine, 15 grains; Glycerine, 5 drachms; Nitro-glycerine, 1-10 grain; Morphia sulph., 1 grain; Atropia sulph., 1 grain; Carbolic acid, 3 drops, and distilled water sufficient to make 2 ounces. He says that Cocaine is the basis of all local anæsthetics and it is a dangerous drug to use, unless its physiological action is well understood, consequently the formula is devised with a view of obtaining the best results and of thwarting all dangerous issues. Hence, he says: "There is sufficient glycerine to localize the cocaine, holding it in apposition to the parts a sufficient length of time to complete the operation, and not so very long that it acts as an irritant and causes swelling. The nitro-glycerine is intended to stimulate the heart just in proportion as the cocaine may depress it. The sulphates of Morphia and Atropia overcome the after pain. The carbolic acid is intended to preserve the solution. In patients who have a poor circulation sometimes there is a swelling with this formula, but it will be painless and will subside as soon as the anæsthetic, with which you have infiltrated the tissues, has become absorbed." The anæsthetic figures a one and a half per cent. solution of cocaine, and the solution or formula was used effectively *nine months* after it was compounded. Implantation can be made with this Local Anæsthetic painlessly. He uses it effectively by rubbing on the gum before adjusting a clamp which may impinge on the gum.

In using the hyperdermic syringe, the needle should be introduced into the gum tissue horizontally, that is, pointing towards the back of the mouth. It should never point against the bone. The needle should be forced in, in the direction stated, about a quarter of an inch, and the point of the finger of the left hand pressed on the gum where the point of the needle is. Pressure is now made on the piston, while the finger presses the gum. The anæsthetic is thus forced into the gum, which when effective assumes a whitish appearance as well as swelling up and forming a "weal," varying in size from a ten cent piece to a quarter of a dollar. Considerable force has to be used on the piston to make the anæsthetic infiltrate into the tissues and produce the anæsthesia. If the liquid is passed through the syringe, emptying it with little force, no effect will be attained; under such circumstances the gum will not be blanched and the weal will not be formed. It is, therefore, necessary to obtain the local anæsthesia that the liquid should be forced into the tissues slowly, forcibly and drop by drop.—Dental Office and Laboratory.

Communicated.

INTERNATIONAL DENTAL CONGRESS.

PARIS, FRANCE, AUGUST 8TH to 14TH, 1900.

The Committee appointed by the National Dental Association at the Omaha meeting, August 30th, 1898, was by order of the Chairman, Dr. A. W. Harlan, convened at the Cataract House, Niagara Falls, August 1st, 1899. No quorum being present, was adjourned to the 3rd inst. at 4 p. m.

There were then present: A. W. Harlan, Chicago; H. A. Smith, Cincinnati; Thomas Fillebrown, Boston; T. E. Weeks, Minneapolis; J. D. Patterson, Kansas City; H. W. Morgan, Nashville; T. W. Brophy, Chicago; W. C. Barrett, Baffalo; W. W. Walker, New York City; W. E. Griswold, Denver, Colo.; B. Holly Smith, Baltimore; J. Taft, Cincinnati, Ohio.

The meeting was called to order by the chairman, who gave a short address, stating the object, organization, etc., of the Congress, and the work necessary for the committee to accomplish in this country.

On motion of Dr. Weeks, W. E. Griswold was elected Secretary.

On motion of Dr. Fillebrown, Dr. Wm. Jarvie, of Brooklyn, N. Y., was elected an additional member of the committee.

On motion of Dr. Smith, the Chairman and Secretary were instructed to confer with the National Association in regard to arranging an earlier meeting next year to accommodate those going abroad.

On motion of Dr. Weeks, H. S. Sutphen, of Newark, N. J., was made a member of this committee.

On motion of Dr. Barrett, a place on this committee was reserved for the President of the National Association in the year 1900, and the chairman was authorized to insert his name.

On motion of Dr. Brophy, George H. Chance, of Portland, Oregon, was made a member of this committee.

On motion of Dr. Barrett, a resolution requesting any member of this committee, finding himself unable to go abroad to attend this Congress, to at once resign, and that the executive committee be empowered to fill the vacancy, was passed.

On motion of Dr. Smith, the chairman was requested to appoint a transportation committee composed of Dr. Jarvis, Dr. Walker, Dr. Harlan and Dr. Griswold.

On motion, a committee consisting of Dr. Brophy, Dr. Weeks, Dr. Morgan, was appointed to take charge of the exhibit of American Educational Methods.

On motion, an executive committee of five was appointed, consisting of Dr. A. W. Harlan, Chairman, Dr. Barrett, Dr. Brophy, Dr. E. C. Kirk and Dr. H. A. Smith.

On motion, the executive committee was empowered to fill vacancies in this committee.

On motion, adjourned to meet at call of chairman.

W. E. GRISWOLD, Secretary,
423 Mack Block, Denver, Colo.

EDITOR OF THE AMERICAN JOURNAL OF DENTAL SCIENCE.

Dear Sir:

The thirty fourth annual meeting of the Ohio State Dental Society will be held at the Grand Southern Hotel, Columbus, Ohio, December 5th, 6th and 7th, 1899. A good program consisting of essays and clinics has been prepared. A cordial invitation is extended to the profession at large.

HENRY BARNES,
Chairman Executive Committee.

EDITOR OF THE AMERICAN JOURNAL OF DENTAL SCIENCE.

Dear Sir:

The Pennsylvania Board of Dental Examiners will conduct examinations simultaneously in Philadelphia and Pittsburg, December 18th, 19th and 20th.

Application for examination must be made to the Hon. James W. Latta, Secretary of the Dental Council, Harrisburg, Pennsylvania.

G. W. KLUMP, Secretary,
Williamsport, Pa.

Monthly Summary.

UNDER ONE FLAG.—One of the most conducive evils checking the united progress of dental education in this country is the innumerable degrees conferred on our dental graduates. The mother profession (medicine) is surprised to know that such is the case.

Medicine, with all its years of existence, has had but one degree, M. D., the world over. For the past fifteen years I have studied the evils of these innumerable degrees. I have taken up the subject and have solved it as one would solve a problem in mathematics. I have arrived at the full conclusion that any person treating a part of the human body like eye, the ear or the teeth, for a cure, is practicing a branch of medicine.

I am frank to say that any educational institution with the legal authority to confer a degree in any one of these branches should grant a degree having a medical tinge by ending with M. D. and the additional letter (in Latin,) indicating the branch or the specialty, thus making the dental degree D. M. D., and presenting the graduates with a degree indicating a dental medical education, an education so thoroughly tinged with medicine that there can be no question as to the graduate's ability to treat his patient systemically as well as locally for his cure.

This degree calls for a course of dental study so saturated with medicine that a graduate upon receiving it will be thoroughly qualified to treat any form of dental disease the mouth and teeth are heir to, without the aid of a physician. This does not mean that he should never consult with the physician. This course of study is to strengthen the union between the physician and the dentist in times of consultation.

We should make our course of study along these lines for our own name's sake and our future welfare.

What our country requires is better tooth doctors. I recommend this degree above all others, and the course of study for which the degree calls, to be adopted by all the schools as fast as they become able to present the course of study which the degree indicates, as the only possible way to procure an even, equally high, recognized standard of dental education in America. I say put us under one flag (D. M. D.,) and with the course of study which I have mentioned.

One of the reasons for which I recommend this degree is that M. D. covers everything in surgery. There is no surgical degree in medicine, and it is safe to say there never will be one. Therefore, I can see no good grounds for one in any of its branches.

Harvard stands to this country as does Oxford to England. Harvard selected this degree, and not without thought for the future. It was a wise and far-sighted selection. I I honor the institution for its choice and the course of study which the degree indicates. Harvard will never change this degree. She well knows it will do the same for her dental graduates as M. D. does for the medical graduates. Students educated along these lines and under one degree will retain their title of doctor, which has already been scratched in two countries. They will have retained the confidence of the mother profession (medicine) in times of consultation, and the entire profession for the cure of all material diseases will become united and "inseparable forever."—Dr. August L. Wells, Jr., Boston, Mass., in "Items of Interest."

TREATMENT OE ABSCESS SWELLING.—When I have a case of swelling resulting from the formation of abscess, I have no better treatment than the saline cathartic. I have never used a compound cathartic pill. It may be effective by producing a general depression, but the saline is the only remedy I know of for reducing a swelling after an abscess has opened.—Dr. Greenbaum, in "International."

OIL FOR APPENDICITIS.—Dr. M. O. Terry, surgeon-general of the National Guard of New York, adv cates the use of oleaginous cathartics in the treatment of appendicitis. He asserts that of fifty-one cases under his personal supervision, forty nine were successfully handled without operation. This treatmont ("Medical Times") is as follows: At first, cathartics of castor oil and sweet oil, followed by hot water, are given until the bowels are thoroughly cleaned out. This treatment is followed by enemas of glycerine and sweet oil. Flaxseed poultices soaked in sweet oil are kept on the abdomen. The diet is restricted to very light, easily-digested foods. The oil treatment, Dr. Terry says, removes the friction of the inflamed tissues and relaxes them during resolution. In this way, he says, he has cured cases of chronic recurrent appendicitis. To prevent a return of the trouble after the original treatment, he prescribes a tablespoonful of sweet oil followed by a glass of hot water, before each meal, for several weeks.—"Medical Brief."

EXTRACTION OF TEETH.—In general, the incisors and cuspids should be twisted from their sockets. The bicuspids rocked from side to side and twisted. The first and second molars are rocked and forced backward. The wisdom teeth should be tilted back with an elevator forced between it and the second molar and then taken from the socket with the forceps. The elevator well understood is the most useful of all extracting instruments, and the dentist who learns its use will relieve patients of stubborn roots that forceps will leave to worry them and cause maledictions to be heaped on the luckless tooth-puller.—Dental Hints.

TO REMOVE GUTTA-PERCHA POINTS FROM ROOT-CANALS.—Roughen the point of an Evans' root-canal dryer; heat the bulb and pass the point slowly into the canal. Cool the bulb with a wet sponge, and on removing the point the gutta-percha will come with it.—"Indiana Dental Journal."

A SCHOOL INSPECTION.—When Russia takes any matter in hand it is generally carried out in a thorough manner. I see that the Russian Public Health Society has appointed a committee, under the presidency of Dr. Limberg, for the organization of a regular system of dental inspection and treatment in schools, not only in St. Petersburg, but throughout the empire. As a preliminary step the committee has sent out a circular of questions to all heads of schools of the lower and middle grades, and to all practitioners having medical charge of such schools. It will be interesting, if these results are published, to compare them with the similar work which has been carried on for some years in some of our Board of Guardians' Schools, and by the lately-formed School Dentists' Society.—Dental Record.

A COUNTER-IRRITANT.—I instruct my patients to mix a little ginger, red pepper and mustard, and sprinkle a little on the fleshy part of a raisain, and then roast the raisen. This is an easy method of making a capital capsicum plaster in case of emergency. It acts like a charm generally, and is more effective than the roasted raisin by itself.—Dr. Roberts, International Dental Journal.

TO GIVE A FINE FINISH TO GOLD.—After the scratches have been removed with pumice stone, nothing is so effectual as oxide of zinc on a brush wheel. It leaves a beautiful, lustrous polish, and does not soil the hands.—H. H. Johnson, in "Dental Weekly."

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, JANUARY, 1900. No. 9.

Selections.

ARTICLE I.

INTERSTATE COMITY IN DENTAL LEGISLATION.

RODRIGUES OTTOLENGUI, M. D. S., NEW YORK.

Report as correspondent read at the annual meeting of New York State Dental Society, May, 1899, and here published by courteous permission of the Editor of the "Cosmos."

Mr. President and Gentlemen :—In seeking a subject about which to correspond with members of the profession, in order to obtain a basis for the usual Correspondent's report, it has seemed to me that the one subject which, at present, interests the larger number of dentists throughout the country, and the one which is in most need of discussion and final settlement, is the question—"How best to unify the various State dental laws throughout the United States ?"

The following is a copy of the letter which I sent to the secretaries of all the State Examining Boards in the country:

"My Dear Doctor:--As Correspondent of the New York State Society, it is my duty to annually present a report upon some feature of dental practice of vital interest to the whole profession. At the present time there seems nothing which will arouse more universal interest than a discussion of some method by which a uniform standard of education, or more especially of the granting of licenses could be arranged throughout the States.

I send you herewith a copy of *Items of Interest* for February, in which you will find a paper on the subject by Prof. Kirk, and also a discussion. I would ask you also to read my editorlal.

Having done this, I would like you to send me, with permission to report it to my society, your own opinion, and, if possible, the opinion of your entire board, it it could be obtained at a meeting, as to the feasibility of either of the following methods.

First, the one suggested in the editorial—That applicants for licenses should be required to present the papers upon which they were examined at college when obtaining their diploma. The State Board, upon being satisfied through these original examination papers, that the applicant is worthy, to give him a license to practice; and, secondly, to accept a license of this character granted in similar manner by any other State.

Second Proposition—For all State Boards, members of the National Association of Dental Examiners, to make use of identical examination papers, the same being prepared by a committee of the national body; licenses granted upon such examination papers to be interchangeable among the states represented in the National Association.

Is it not a fact that without appealing to the legislature of your state, your body is privileged to consider either of the above methods a satisfactory examination of the candidate ? This is to say, is not the examination letf to the determination of your Board ? In which case, you will be at liberty to carry out either of the above propositions.

Lastly, in case neither of these would seem practical in your state, have you any alternate proposition whereby it would seem feasible, within an early period, to attain interchange of licenses between states ?

The replies received to date are as follows :

I have to state that, under the existing dental law of the District of Columbia, the Board of Dental Examiners is required to grant license to all graduates of all dental colleges which give a three year course of study, and to examine all other applicants, to test their qualifications, both in theory and practice of dentistry before granting license. We have a new bill before Congress, and, if enacted, the Board will have more latitude than it now has especially in respect to interchange of licenses between states.

In expressing my personal opinion upon the subject matter, will state that I fully indorse the suggestions made in your editorial, believing them a proper solution of the question.

C. W. APPLER,
President.

Washington, D. C.

It is with the greatest pleasure that I accept your courteous invitation to give my views on Prof. Kirk's paper and the ideas advanced by yourself in the discussion of the same, and in your editorial in the February *Items of Interest.*

This subject has been one of grave consideration to me for a number of years, and I must allow that there are many alluring thoughts in both of the plans suggested, but, unfortunately, I cannot but see the other side of the picture.

As to the first suggestion, it would have to be made absolutely sure that in no case could there be connivance between the college and the pupil. There may be dishonest colleges, another writer in the same issue of the *Items of Interest* suggests that there are and that by the means you propose they will be forced to raise their standard. Admitting simply for the sake of argument that there may be some such dishonest colleges, what is the guarantee of the genuineness or originality of the answers to the college questions? If a professor in a college would offer to sell to a student up for graduation, the questions and answers of a State Board before whom he had to appear, might he not be willing to dispose of the answers to his own questions for the benefit of his own school, if he thought its reputation in danger? And after all, would this method be as thorough an "examination of the college" as by the present means? What is the difference whether the applicant is rejected on the college questions or the Board questions? Does it not reflect upon the institution in practically the same way?

As to the second suggestion, it is, in my opinion, theoretically most excellent, but practically impossible, as I do not believe that any means could be devised to prevent the questions from becoming marketable before some of the state examinations, owing to the differences in the dates of the college commencements, as well as the meetings of the State Boards.

Under the laws of New Jersey the manner of examining is left to the Board, so that in answer to your question on this subject I would say if our Board considered either of these suggestions practical, they could adopt it.

As to the last, of course we all have our ideas of Eutopia, but then along comes the other fellow to show they are not practical. I have my ideas on this subject; I have talked them and written them for years. In the first place, strange as it may sound, I am opposed to Examining Boards, not to the Boards themselves, understand, but the conditions which made such an impression necessary. When a graduate receives his diploma, he should receive with it the right to practice anywhere under the Stars and Stripes, without let or hindrance from any one.

How can this be accomplished ? Let the final examinations for graduation in all colleges be conducted by a National Board of Examiners, appointed by the government of the United States. A diploma issued under these circumstances would be universally received and the necessity of State Boards abolished. This may be a long way off, but, in my opinion, it is the only safe and practical solution of the problem, and with a combined effort from the profession. colleges, and State Boards, backed by the National Association, I believe it will succeed.

G. CARLETON BROWN, Secretary,
Elizabeth, N. J.

I have read Dr. Kirk's paper, also discussions, together with your editorial, very carefully, and must say the more I read them, the more confused I become in regard to the burning question. It is a question to which I have given much study and thought, and yet cannot say that I have arrived at any definite conclusion.

This Board is a member of the National Association of Dental Examiners, and as such is in full sympathy with its work—that of raising the preliminary standard of colleges. To my mind that is the most important question at this moment. What dentistry needs to-day, above all things, is an educated body of men, and this can only be accomplished by insisting upon the colleges admitting only educated men. This they must do. The time has arrived for it. If they do not acquiese willingly, then they must be either forced into line or else come to grief. This is the work of the National Association, and this is the issue it is pushing with all its might and main. This Board has taken a firm stand along this line, and is not recognizing diplomas from any college not on the recommended list. It has a bitter fight on its hands, but is going to win. The National Association having accomplished this, it will then, doubtless, take hold of the question of a "uniform standard of granting licenses throughout the states."

As our law requires us to grant licenses to all reputable graduates, we would not give you any suggestions as to the best manner of solving this question, so far as experience is concerned. I must say, however, that your idea is worthy of much consideration, and I believe comes as near solving the question as any that has thus far been offered, although I most certainly dissent from your opinion as to "State Boards being a necessary evil."

W. H. CARSON, Sec'y,
Milwaukee, Wis.

As there is considerable diversity of opinion as to the feasibility of the suggestions in your communication, I am authorized to use my own discretion in answering.

Your first suggestion is not perfectly clear to me. If you mean that a list of the questions used at the college examinations be submitted to the Board, that could give us no idea of an applicant's status, and I am sure the college faculties would not allow inspection of answers.

The second suggestion, to have identical examination papers, would necessitate the holding of simultaneous examinations by the different State Boards. If one Board meets for examination one week, and another Board meets the following week, applicants might be enabled in some way to obtain a list of the questions.

Our law allows us considerable latitude, and any of the suggestions could be adopted, if feasible.

I am very sorry that we cannot give this matter more attention, but I assure you that our Board is in entire sympathy with any project that will elevate the standard of dentistry.

J. G. HEUISLER, Sec'y.
Baltimore, Md.

It was impossible, after your letter came into my hands, to get our Board together in time to obtain an expression of the body. To myself, personally, either of the two propositions would be satisfactory, except that the first would, I fear, remove the test very little away from the faculties of instruction. This, you may deem, an uncharitable view to take of it, but so long as men's wings have not sprouted, safeguards appear necessary.

The use of identical questions, if feasible, would, to my mind, appear the most impartial. It would involve simultaneous examinations in all the states, just as two weeks ago, we, in this state, held such in three separate places.

As I interpret our law, there would be no necessity for further legislation for the adoption of either proposition in our state.

H. GERHART, Sec'y,
Lewisburg, Pa.

I am not in position to express the sentiments of the Board at this time, as our next Board meeting will convene on May 13.

To express an individual opinion at this time will say that considerable opportunity is afforded for discussion on either of the propositions presented. Both of the methods seem to have merit, and no doubt can be discussed at the National meeting.

J. H. SMYSER, Sec'y,
Chicago, Ill.

In reply to your communication will say that our Board does not meet again before the second Tuesday in July, and of course I can get no opinion of the Board.

Being a subscriber to *Items of Interest*, and holding the position I do on our Board, of course, I had already read carefully the articles referred to.

I would not object to your first suggestion, and do think, if carried out honestly, it would answer every purpose, but care should be taken that such papers be not tampered with by any one.

I have no objection to the second proposition, if the same care be taken to keep the questions well guarded by those who have the right to handle them.

It is a fact, according to my understanding, that our Board has discretionary power about examination, and could carry out the above propositions, if so desired.

You will notice that I seem particular about who should handle questions and examination papers. I have served on our State Board over ten years now, and have some experience about stolen questions and other underhand methods about examinations. Our Board is composed of graduates and has the reputation of being very strict, which may be the cause of my experience, and few members of the profession would believe the tricks employed by some to pass the examinations. Then, again, if some of the questions and answers I have seen in print are samples of the examination papers where some of the colleges grant degrees, I should not like to trust those same professors too far. So I say, if honestly carried out, your plan would be very well, but unless all parties who handle the papers can be trusted fully, we may better stick to the old way.

J. R. THOMPSON, Sec'y,
Newberry, S. C.

As our Board has not had a session since receiving your communication, what I have to say in reply represents my own ideas. But I know that these are shared in part by some of the other members of the Board.

Your first suggestion relative to applicants obtaining licenses upon the papers upon which their diplomas were granted is, I consider, a good one. At any rate it would afford a Board a better opportunity of knowing more of the qualifications of the applicant. To this, however, should be added a requirement of two days' practical work at the chair, and a license granted to applicant based on his standing in these. If the standing of State Dental Boards were uniform throughout the Union, then a license granted in our state should be respected in each and every State in the country. But such is not the case, for various reasons (in part, political) which cannot be discussed here. Even in a single State, the competency of the various Boards that come into power in a given number of years fluctuates.

Second suggestion of State Boards using identical examination questions prepared by a committee of the National Association of Dental Examiners, is a good suggestion also, provided the examining Boards meet at one and the same time throughout the country. This contemplates, of course, examining the product of our colleges. All this being equal, the better the material going into these institutions, the better the product.

If such a thing as having all dental colleges equally competent to give instruction to their students were possible, then the quality of the material entering into those institutions would alone need to be considered, and to a large extent we would be satisfied with the general output. But different motives govern different colleges. The same to a little less extent we find true with State Dental Boards

It has been suggested that the Dental Boards allow the colleges to accept any and all applicants and graduate whom they choose. That all State Boards examine all applicants for dental licenses with questions prepared by a committee of the National Association of Dental Examiners. That the answers be sent from each State (members of the N. A. D. E.) to the committee having prepared the questions, they to examine and grade them, and on the committee's markings, the State Board to either refuse or grant registrative certificate or license.

Our last State Legislature passed laws giving the Board greater power, and enables us to examine any or all applicants for license. I will send you a copy of the laws.

M. A. MASON, Secy,
Ft. Wayne, Ind.

Your first proposition about the granting of licenses to an applicant upon his original college examination papers, seems to me to be a very fair and just one, provided the said papers could be had direct from the colleges in an untampered condition.

Your second proposition meets with my hearty approval, and I hope to see the day when such a rule will be in force.

Third, yes. C. V. VIGNES, Sec'y,
New Orleans, La.

In regard to your inquiries concerning the granting and interchange of licenses, etc., I reply briefly as follows :

Our Board are unanimous in the opinion that some change is desirable, but they are not unanimous as to the practicability of any plan. We have had no meeting, but I have obtained an expression from all our members except one, and the second proposition, as stated in your letter, is regarded with favor, but one is not prepared to favor interchange of certificates.

I believe that it is the privilege of the Board to consider and adopt any of the propositions given.

I have not at present any propositions to make.

D. W. FELLOWS, Sec'y,
Portland, Me.

Your first proposition, if adopted as a whole, would defeat the very object for which it is proposed. Without going into the merits of the first clause, and admitting the desirability of its intent, it would be null and void if the second clause was adopted, for this reason. Immediately upon the graduation of a student he would present his papers to the local Board, receive his license, and the same would be accepted by all other Boards as satisfactory.

In place of this proposition, it seems to us that the plan adopted by the Nationrl Association of Dental Examiners is far preferable. Let each State Board have jurisdiction over the local colleges, enforce rules similar to those insisted upon by the National Association, seek means to compel their observance, and when the school comes up to the standard thus established, let all other Boards accept the diploma as fully meeting their requirements, and issue a license without further delay.

This rule of the National Association is strictly enforced by this Board, which is given such power by our law, and is found in practice to be equitable and just. We have had numerous applicants from graduates of colleges not recognized by the National Association, who, when notified that we could not give them a license under our law, have quietly departed without further trouble. The Board and the profession generally are much gratified at this provision of our law.

We are, therefore, of the opinion that proposition No. 1 is not feasible.

The second proposition meets with our hearty commendation. We will be glad to see such a provision adopted.

It is a fact that, without appeal to the legislature of our territory, either of the methods would be considered a satisfactory examination. The examination is left entirely to the discretion of the Board.

The suggestion given above seems to us, after six years' practical experience, to be nearer our ideas in regard to the interchange of licenses between the states than any method yet proposed.

D. W. MANLEY, Sec'y,

Sante Fe, New Mexico.

In regard to dental legislation, it seems to me that some of us have never comprehended that dental laws are police regulations, intended for the protection of the people, and for that alone.

The state cares nothing about protecting dentists from competition, but it cares a great deal about protecting the public from incompetent dentists. Nor does the state care where or how a dentist gets his education, provided, only that he has sufficient training not to prove dangerous to the community. Accordingly, in Kentucky, the legislature has constructed the State Board of Dental Examiners, solely for the purpose of protecting the citizens against incompetent dentists.

The law provides that no one shall practice dentistry in this state without a certificate of qualification from said Board, and that the evidence by which he may establish that he possesses sufficient learning and skill to entitle him to a certificate, shall be either such a diploma as proves the possession of the necessary attainments, or in the absence of such a diploma, the standing of an examination by the applicant by which he gives evidence of this fitness.

In a word, no one can practice without a certificate from the Board, and this can be secured by means of a diploma or an examination, and in no other way.

The Board deals wholly with individuals, and passes on the qualification of each individual applicant, as evidenced by his diploma or examination.

The Board owes no duties to any college, as a college; though, if the college maintains a standard of sufficient grade, its graduates are entitled to certificates upon presenting and filing their diplomas; but this is true, because, and only because, the diplomas taken as evidence, satisfy the Board that the parties holding them possess such knowledge and skill that they can safely be turned loose on the public.

The Board has no authority to require the applicant to produce his examination papers, and no right to issue any certificate on them; nor has the Board any right to recognize "licenses" granted by other states. Of course, a law might be passed authorizing the Kentucky Board to recognize licenses granted by other states, but the Board should not do so without such a law.

The prevailing notion that dental legislation is enacted, 1st, for the protection of the dentist from competition and 2nd, for the protection and benefit of the colleges, seems to me to be fraught with great danger to the cause of dental education. The protection of the people from incompetency is, and ought to be, the only ground on which such legislation can be maintained.

The great trouble in enacting satisfactory dental laws is the fact that a large majority of the people, both in and out of the calling, have no just conception of the scope of such laws.

We need education along these lines.

Of course, if a uniform law could be passed by all of the states, it would be very desirable; but, when we think of the difficulties in the way, it is an undertaking from which we may well shrink. We would first have to agree on what ideal law was, and then have it passed by all of the states exactly as agreed upon.

To any one who has had experience in trying to influence legislation, this proposition is absurd; the whole plan, to my mind, is simply impossible of accomplishment.

As to the proposition to have a National law regulating the whole matter, the advocates of such a plan evidently have no appreciation of the basis on which this government is formed. As mentioned in another part of this letter, all laws concerning the health of the people of the states come under the head of "police regulations;" these regulations begin and end with the state and cannot be made a matter of National law.

J. H. BALDWIN, Sec'y,
Louisville, Ky.

The idea of having an applicant for a license to practice dentistry in any state, present the examination papers upon which he was examined in college, is a good one, still this has its drawbacks, for it is a fact that quite a number of students are graduated each year, and from our best colleges, who are not qualified to practice dentistry. Where there are so many students, it is impossible for the college instructors to watch every student while doing the work required of him. For instance, a student (who has been a laboratory worker for several years) told me that during the past winter, he earned enough to pay nearly half of his expenses, helping fellow students do their deposing and practical cases required by the college. In mentioning this, I do not intend it as an attack on the colleges; far from that, but to show that some students manage to evade the requirements of the colleges.

2nd. I cannot favor the idea of having an identical list of questions gotten up by a committee of any association, for the reason that the various State Boards hold their examinations at different times. An applicant might be refused a license in one state, and being familiar with the list of questions, could go to another state and pass the examination. . I would favor such a committee making up examination papers that would be uniform, but different questions for each state. Here, in New England, we have an Association of Dental Examiners, and we are trying to make our examinations uniform and to get uniform laws, that we may accept licenses from other states in place of an examination. I would like to see this done by all the states in the Union.

Our law says, "shall at its meetings, examine applicants, etc." If a license is given without examination we are discriminating. Law does not allow any one to discriminate. When the time comes for the recognition of licenses from other states, an amendment to the law, giving the authority to accept a license from another state in place of examination, can be easily obtained.

I hail the time when all states shall have such uniform laws and examinations, that the interchange of licenses may be brought about without doing an injustice to any one—colleges, examining boards, practitioners or patients. GEORGE F. CHENEY, Sec'y,

St. Johnsbury, Vt.

In regard to your first proposition, I believe that such a method of examining candidates for state license would tend to encourage some colleges to fraudulent acts, and would tie the hands of the examiners, so that it would be impossible to stop it. I do not mean to say that all, or even a large per cent. of the colleges would take undue advantage of the examiners, but if even one did, that would be argument enough against the plans. This proposition carried to its last analysis is the same thing as registering diplomas straight out; the only difference is that one method has "red tape," and the other has not.

Your second proposition is a good one, but at this time I do not think it could be put into practice, without arousing political influences that would in some cases, injure the usefulness of the Board for years, and delay the interchange of licenses for some time to come. If this plan of examining candidates could be put in practice, we would not be far from interchange of licenses.

There is nothing in the Virginia law that would prevent a Board of Examiners from accepting either of the propositions mentioned.

I regret I cannot offer an alternate proposition to obtain interchange of licenses between states. An unrestrict-interchange of licenses between states, in my opinion, would not be desirable. An interchange whereby worthy and competent men could practice anywhere in the United States is desirable, and I would be glad to see the consummation of the plan by which this could be brought about. It will require time, careful thought, and considerable work to perfect a plan whereby justice can be done in the matter of interchange of licenses between states. Any plan should be thoroughly safeguarded against incompetent men.

H. W. CAMPBELL, Sec'y,
Suffolk, Va.

Personally, I have been pleased to read the advice, opinions and suggestions in the journal at your request. At present, I could not indorse either of the propositions contained in your letter, as being at all feasible or practical.

Our Board has long been interested in this matter, but realize that the attainment of even a portion of what is desired, will require a long time—legislative changes are not easily obtained everywhere—then we would not think it possible that the dental schools would consent to have their examination papers taken all about the country to be examined by a State Board at any and all times whenever a man desired to locate in its territory. Do not also think it feasible, for a time, to have the examinations throughout the country on the same day, and the issuing of questions left to the National Association of Dental Examiners.

Our Board, two years ago, organized with the other New England Boards, an association for the purposes under discussion; have held profitable meetings, and attained as much, I think, as we could in our work here. I think it is in evidence we cannot attain the objects the two propositions aim at, only in a comparatively slow manner. It will require a long time. The schools must be of even excellence, the Board of Examiners must have the same standard, provision must be provided to examine a candidate even if he has not attended a dental school, but I will not dwell longer upon my personal views.

G. E. MITCHELL, Sec'y,
Haverhill, Mass.

It is the unanimous opinion of the Massachusetts Board of Dental Examiners, that your first suggestion is impossible, for the reason that our twelve years' experience as an examining board has taught us that many of the young men who appear before us, recent graduates from reputable colleges, have utterly failed to pass our examinations, and are, in our opinion, incompetent to practice dentistry.

Your second proposition also seems to us very impracticable. It would necessitate examinations being held everywhere on the same day, which is not feasible, and would allow too much concentration of power in a few individuals.

Our New England Association of Dental Examiners was organized with a view to bringing about in New England, what seems to us the only practical way to interchange certificates, namely, a uniformity of legislation and of uniform standard of qualification. Though we have been in existence but two years, I feel we have made respectable progress; already two laws have been changed to harmonize with Massachusetts; and when those who are a little lax come into line, we hope to form a perfect law for New England.

J. F. DOWSLEY, President,
Boston, Mass.

Without going into discussion I would say, in regard to your first proposition, if all men were honest, if all were half as anxious to elevate the profession as they are to fill their pockets, this plan offers great inducements; but so long as the ungodly are in power, so long as colleges are run on a money-making basis, so long as there is a handsome surplus to divide among the favored few each year, I fear that plan would not be reliable.

Second Proposition—The first thing should be a uniform standard for matriculation, and this should not be a farce, but should be placed high enough. so that our eyes and ears will not be constantly shocked by bad chirography and worse grammar. If you could sit with an examining board for one session, and see the time consumed by trying to read writing that would make a Chinaman turn green with envy, grammar that is execrable, and spelling that gave you "bad spells," you would think and say at once, "For Heaven's sake, make the standard high enough that the people be not shocked by such display of ignorance."

This may seem overdrawn, but quite a percentage of that class come up every year, and it is needless to say they do not favor raising the standard.

For our state, we have settled upon a full High School course, as a prerequisite for matriculation. This insures a fair English education. Let the other states adopt the same standard, or one equally as good, and we are all on a par to start with.

Then let a committee be appointed by the National Association, National Board of Examiners, State Societies or by such power as may be deemed best, to formulate questions for examination. Let all State Boards adopt these questions and we have a uniform examination throughout the states, and a license in one state would be equally good in another. Of course, the applicant must have taken his degree in regular form.

I think the New York State Board of Dental Examiners, in connection with the Regents of the University, have full power without further legislation to adopt any method of examination which may be deemed best for the elevation of the dental profession.

FRANK FRENCH, Sec'y,
Rochester, N. Y.

None of the members of the Board seemed to altogether approve of either the first or second proposition. There is such a different standard of qualification in different sections of the country, that it is very difficult to fix one to suit all. What might suit the standard of West Virginia, might be very far from the standard of New York or Boston. Colleges in different part of the country are turning out handsomely finished, full fledged, first class dentists by the hundred—yes, by the thousands—with beautifully finished diplomas, on which very few are able to read anything except their own names. Many of them are as well qualified to practice dentistry as a hog to teach Latin. Some are bright boys, and, probably, are good mechanics, so after some practice and experience may make good mechanical dentists.

We think as a Board, we have the right to determine the qualifications, and decide the question whether or not the candidates are qualified and fit to practice dentistry in our section of the country. A Board of Dental Examiners in Boston, and possibly in New York, might give their noses a celestial turn if a West Virginia Board should attempt to indicate to them what sort of an examination they should give their candidates.

It certainly would be a great convenience, if some universal law could be made, that would suit all the different states.

I have not gray matter enough to work out so important a question. It is a problem requiring the head of an experienced legislator.

We think we are all practical sort of men, and would be pleased to vote for anything that seems feasible, and would be glad to have some universal law that would make one examination do for all the different states.

CHAS. H. BARTLETT, President,
Parkersburg, W. Va.

I am convinced that we need a uniform standard of education. Either of your plans would accomplish the purpose, but my preference would be for the second proposition.

I think that under the law of this state, the examination is left to the determination of our Board, and we would be at liberty to carry out either of the proposition.

R. H. JONES, Sec'y,
Winston, N. C.

I am of the opinion that the second proposition suggested is the more desirable. I think it should not be limited though, to Boards which are members of the National Association. I do not believe in making it compulsory for Boards of separate states to join the association. Think it is a step in the right direction.

R. A. SHINE, Sec'y,
Tallahassee, Fla.

In regard to the proposition that State Boards should issue a license upon presentation of the diploma and the original college examination papers as guarantee of the knowledge of the applicant for examination, I would say, that it seems to me that this is almost an impossibility, and, in fact, would be so in many cases; especially the men who are now graduates and who cannot obtain papers written by them when in college, and even if they could secure their old individual examination papers, it is a question whether they would be of such character as to meet with the approval of the State Boards at the present time.

The suggestion that the State Boards agree to a definite examination by questions issued by a Committee of the National Board of Dental Examiners, I think is the only fair solution of the question—with this proviso; that where it is possible, the State Boards agree to the same date for the examination in the different states, say during January and July of each year, and within, if possible, the same week of these months, at which time all applicants for examination should be given the questions as issued from a Committee of the National Board of Dental Examiners. These questions to be furnished to the State Boards in such manner that no knowledge of them could be obtained by any person or persons who are to be examined. Papers written by parties examined under these conditions to become a part of the evidence of their ability as dental practitioners. These papers with a license from any State Board, issued under the above conditions, to be accepted by all other State Boards agreeing or being parties to this agreement. This arrangement would allow the practitioner to take the State Board examinations at any of these semi-annual meetings, and after having once passed any State Board or the National Board of Dental Examiners' questions, he would be eligible for license in any other state agreeing to this arrangement, no matter at what time he might desire to change his residence.

I think the greater part of the State Boards who are members of the National Board of Dental Examiners would permit of this arrangement, and to so change the date of their meetings by which we could have a uniform date, say, the second week in July and January, at which time all State Boards would hold a meeting, and each and every applicant for license would be compelled to have the same examination, thereby showing no favoritism of politics to any candidate.

It is almost impossible for State Boards to agree to accept the diploma without question, from any college. Mistakes will happen, and men go through by some method or other, who are thoroughly unfit to practice dentistry or anything else.

The North Dakota Board finds the only successful rule, "To examine all candidates without discrimination as to college or other conditions." After some eight or ten years knowledge of the Board's workings, I believe that this is the only one fair method of arriving at the definite understanding of the knowledge of the applicant for license. In fact, we have had to turn down men from some of the best colleges, while others from colleges of less note have proven in every way, so far as examination would demonstrate, much better prepared for practice.

H. L. STARLING, Sec'y,
Fargo, N. D.

Our Board has had no meeting recently, and I cannot therefore send you the opinion of this Board regarding interchangeable licenses. My own judgment is that the second proposition would come nearest to being practical in its workings. Our law defines thirteen branches, including practical demonstration of ability, that the applicant must pass in.

If these were covered by an examination in another state, it might be legal to consider this a satisfactory examination, but of course, this is a point purely to be decided by the Board.

W. E. Burkhart, Sec'y,
Tacoma, Wash.

In regard to suggestion No. 1, the idea of having applicants present to State Boards their original papers upon which they were examined is to me commendable, in so far that it assists the Dental Boasd, but the granting of a license upon said papers and the interchange of licenses granted upon such evidence of ability, would never meet with my approval.

Suggestion No. 2—State Board making use of identical examination papers; this is commendable, provided, however, they be the original papers and not made interchangeable; your method, however, would meet with no opposition from our legislative body because our laws are founded upon findings from the National Association of Dental Examiners.

I have no propositions to make in regard to making licenses interchangeable, for it will certainly meet with opposition here.

Geo. E. Ellerbeck, Sec'y,
Salt Lake City, Utah.

Thus, gentlemen, we have before us in concrete form, an expression of opinion from twenty-one Examining Boards, a summary of which brings out some very important facts, not the least of which is the fear that dishonesty would militate against any proposition. Five states, apparently speaking from experience, suggest that dishonesty is traceable to the colleges direct, while some believe that the greatest care is requisite to prevent fraudulent possession of examination questions by applicants for license. If these accusations are well founded, it is a serious blot upon the honor of those in charge of our educational system. Further consideration of this feature is not requisite here, as we are merely seeking to achieve interchange of license, and if there be dishonesty, licenses should not be procurable, even in one state.

To those who have believed that an interchange of license is a dream of Eutópia, the present series of letters must prove as encouraging, as they will be surprising. Two propositions were considered. The first provides that the candidate shall present his college examination papers which shall entitle him to a license, if satisfactory to the Examining Board. To this proposition four States assent, viz., District of Columbia, South Carolina, Indiana and Louisiana, while five others approve the scheme while doubting its possible enactment. These are Wisconsin, Pennsylvania, Illinois, Vermont and North Carolina. Maine, Washington and Florida merely express a preference for the alternate proposition, so that their vote is neither for nor against. Nine States, however, oppose the idea, these being New Jersey, New Mexico, Kentucky, Virgtnia, Massachusetts New York, West Virginia, North Dakota and Utah.

There being nine States that oppose the proposition, and only nine in favor of it, the majority of which latter are doubtful, we may dismiss the idea as untenable, especially as its perfect operation would require the co-operation of the colleges, which could be procured, but only by force. Many of the objections which have been made can be answered, several being due to misapprehension of the scheme, but as we abandon the idea it is futile to waste time in further discussion.

The second proposition has met with such a reception that it merits our most studious and earnest consideration. Fourteen states approve the plan, only three being opposed. Of the others, two failed to approve, merely because they preferred the first proposition; they would certainly accede to the second. Another, New Jersey, thinks the scheme excellent, but impracticable, while a fourth, Vermont, opposes only the feature of identical questions, and suggests a modification which could well be adopted. Thus three states oppose, Kentucky, Massachusetts and West Virginia, while seventeen indorse the idea, these being District of Columbia, New Jersey, Wisconsin. Pennsylvania, Illinois, South Carolina, Indiana, Louisiana, New Mexico, Virginia, Vermont, New York, North Carolina, Florida, Washington, North Dakota and Utah.

The next matter of moment is the third question, whether the Examining Boards being willing to adopt the plan, have they the legal power ? Every state admits that such power exists without further legislation, except Kentucky and Vermont, but we are informed that in Vermont, an amendment permitting interchange of license on an equable basis could be obtained.

The greatest difficulty in connection with all schemes heretofore proposed, has been the impossibility of obtaining further legislation throughout the States. I am exceedingly proud to have evolved a method, agreeable to the examiners of seventeen states, which can be put into operation without special legislation; a plan therefore within the scope of existing laws, and for that reason, worthy, I think, of adoption and trial for a time at least.

Certain objections have been brought out, but these can certainly be met. The greatest trouble seems to be that in order to avoid dishonesty, it would be requisite that the examination should be held simultaneously. One correspondent says this is impossible, but he does not explain why. So far as the examiners are concerned, they certainly should be able to adopt any date agreeable to the majority of those coming into the agreement. The only difficulty which occurs to myself seems to be that students of some colleges would be compelled to lose some months perhaps after graduation before license could be obtained. But this only adds a brief period to their studentship at worst, and if this were thought to be inequitable such graduates might be permitted to practice undisturbed until the date of the first examination after their graduation. If the examinations were held semi-annually this would be but a comparatively brief period.

The correspondent from Vermont objects to identical examination questions for all states, and suggests a single committee authorized to arrange the questions, but having power to promulgate separate questions for different states.

After due consideration of all the letters received I have the honor to suggest the following, as a solution of the vexed problem :

First—That a single National Committee shall arrange the examination questions for use by the State Examining Boards and that license granted by one state, a party to this agreement, shall entitle the holder to practice in any of the states so agreeing.

Second—That identical questions shall be used by those states which could hold examinations simultaneously, but that the committee shall provide separate sets of questions, of equal grade, for such states as could not agree to simultaneous examinations.

Third—Each State Board, in addition to using the National Committee's questions for the theoretical examinations, the successful candidate. however, not being compelled to pass another such examination when presenting his license to another state.

Fourth—That each state, party to this agreement, shall pay a stated fee for its set of questions, the fee being higher where special questions are provided, the sum thus raised to be a remuneration to the committee for the arduous labors which would be entailed by this plan.

This ends my report, gentlemen, but before closing, I beg that the opportunity now afforded of inaugurating a movement which may bring us a solution of this problem, be not lost. May I ask the Society to take some definite action upon the proposition here expounded ? If the final plan here set forth seems adequate, will the Society so vote, and so voting will they send a communication upon the subject to the National Association of Dental Examiners and to our National Association, urging a trial of the plan ?—*Items of Interest.*

ARTICLE II.

BLEACHING DEVITALIZED TEETH WITH PYROZONE.

J. P. PARKER, D. D. S., SANTA CRUZ, CAL.

This is a subject less written of than practiced, which I think it well to bring before the profession for discussion, that ideas may be brought to light, giving us all the benefit of them.

Why should we bleach a discolored tooth? Nature gives us our teeth with a uniformity of color. With the death of a pulp comes a change, more or less discoloring the affected tooth, and in some instances making it very noticeable to the casual observer and objectionable to the possessor. For instance, when we meet a person with nice, clean, white teeth, we observe nothing wrong, the eye not being attracted to any especial feature; but let there be one decidedly dark tooth in the front of the mouth, and the eyes are so involuntarily fixed as to require an effort on the part of the observer to refrain from gazing offensively. So, to have all the features in harmony, the teeth must be harmonious.

When should we bleach? It has been the practice of many of our best operators to rid themselves and their patients of a badly discolored tooth by removing the natural crown and replacing it with an artificial one, thus making it expensive, and giving the patient a tooth which will never be quite as perfect in strength and harmony as Nature gave, for there are few instances when the artificial becomes an improvement over the natural.

The time consumed and the inconvenience to the patient in bleaching, as a rule, is less than in crowning. In bleaching the tooth and root are made more aseptic, thus improving the sanitary conditions of the mouth, and thereby lessening the chances of pericemental inflammation. In bleaching with pyrozone we remove septic matter that we would not if we were only crowning. A tooth should always be bleached instead of crowned, unless the crown will look better and be stronger.

I begin the process of bleaching by first placing the rubber as closely as possible around three or more teeth; if there is a cavity of decay, excavate that and open the pulp-canal; then with a spray of a 25 per cent. solution of pyrozone reach all exposed points inside and out, following with blasts from the hot-air syringe. When it is difficult to reach far into the root with the spray, I employ cotton to carry pyrozone to the end of the root. One need not fear any serious results in so doing; and yet, if there is no necessity for so doing, it is well to avoid crowding it through the apical foramen. After continuing this treatment from twenty to forty minutes, close up the tooth, and in forty-eight hours it will present a great change, usually becoming as white as the others. However, if it does not, repeat the treatment, and it will be a rare case that will need a third application.

I find it very difficult to determine at the first sitting, and while operating, to what extent the pyrozone has affected the tooth, some cases being much more stubborn than others, and in some it is hard to see any improvement at the time of the operation, but the next day may bring great changes.

There are two kinds of stain that I have found very hard to remove, and I doubt if pyrozone will effect a satisfactory result. The first is a mineral stain, and the second is occasioned by the tooth having been stained with oil of cassia or cinnamon.

One writer speaks of pyrozone as injurious to the vital teeth adjoining the one to be bleached, and suggests covering them with wax, but I never have seen any necessity for such a precaution; he also advises cleansing the teeth with alcohol before beginning to bleach, but I see no necessity for that. Another writer speaks of pyrozone 25 per cent. as a *caustic*, spelled with capitals, and yet, it is the most yielding of all caustics, as it does not destroy tissue. True it burns for a time, but the tissue will live, and in a few hours be as though it had never been burned. This writer also speaks of continuing the operation for three hours in stubborn cases, but I see no necessity for it.

Ladies and gentlemen, the time is past when we can cut away a good crown just because it is discolored; we must have some other excuse, and what was good practice ten years ago may be malpractice to-day; so let us move forward with the times, and improve every opportunity to advance; and now that we have had for four years means at our hands for a simple, easy, harmless and inexpensive method of bleaching, it is high time we should use it. It may interfere somewhat with the sale of crown teeth, but it will be much better for our patients and our pockets in the end.

DISCUSSION.

Dr. Clyde Payne: Mr. President, my experience in the use of pyrozone in bleaching teeth has been somewhat limited, though I have bleached several. I think that it is considered the best, and is practically the only means that we have for bleaching teeth permanently, and without damage to the tooth structure.

Dr. H. W. Moore: I may say that in bleaching teeth I have been successful sometimes by repeating the application. I have made a success of it by adjusting the rubber-dam over the tooth, tying it over firmly, turning it up, making a pouch of it, and pouring in a 25 per cent. solution of pyrozone. Tie it firmly in this position and bring down the ends, just allowing the liquid to remain in contact with the tooth for an hour or so. I have succeeded in bleaching teeth in this way when I have failed in another.

Dr. A. F. Merriman, Jr.: I think the suggestion of Dr. Moore a good one. I think I accomplish the same thing without putting my patient to rest for an hour. I had an experience recently that pleased me very much. The patient had met with an accident some twenty-five years ago. She received a blow upon the central and lateral incisors which I judge was the indirect cause of the discolored teeth. I found it necessary to crown the central, but the lateral I bleached to my satisfaction. After the removal of the debris, I used ammonia, and instead of the 25 I employed the 5 per cent. pyrozone, to my perfect satisfaction, for I found I had a good color. The tooth had been discolored twenty five years. I have recently seen it, and there is no re-discoloration. I think you will find that the 5 per cent. solution used with the hot-air blast is about as efficient as the 25 per cent. and much more easily handled.

Dr. C. E. Post: Mr. Chairman, I would like to ask the gentlemen if they are always successful in permanently bleaching? No doubt most of us are able to restore the color to a tooth at the time of the operation, but does it remain that way? Is that your experience, Dr. Parker?

Dr. Parker: Mr. President, perhaps I can answer that best by citing a case. Three years ago a young man came to me for some slight operation, and I found a very much discolored tooth. I think it was the right central. I remarked that I could restore that tooth to its normal color, and he suggested that I try it, which I did. Last spring I had the pleasure of meeting the same gentleman. He and his wife were treveling through the country. That operation was so satisfactory that he, and his wife also, reported at the office for what dentistry each required at that time. I could mention a number of other cases, but will say that with the exception of one, in which I employed the 5 per cent. solution, I know of but one tooth that has become re-discolored. They have all retained their bleached condition, and it would be difficult to distinguish them from their neighbors.

Dr. Post: Will you tell us what you do after bleaching?

Dr. Parker: Just as I would do after removing the pulp; simply pack the canal with gutta percha, and insert any filling that I think best in the remaining cavity.

Dr. Post: Mr. President, I am glad to hear this very favorable report from Dr. Parker on the use 25 per cent. pyrozone. My experience, however, has been rather varied. Dr. Kirk some time ago recommended the use of peroxide of sodium. He suggested making a 50 per cent. solution of sodium. I got a box of the peroxide of sodium three or four years ago, and tried making the 50 per cent. solution; afterwards I simply placed the powder in the tooth and applied some water to it, making two or three applications of that kind very satisfactorily. My experience has been more satisfactory in the use of peroxide of sodium than in the use of peroxide of hydrogen or pyrozone.

Dr. Goddard: Mr. President, I merely want to add a word of caution; do not carry the bleaching too far. I bleached a lateral incisor for a young lady of about eighteen. When I finished, the tooth was actually whiter than its neighbors, and was so the last time I saw her.

Dr. Platt: Mr. President, I would like to say in relation to what Dr. Goddard has just said, I met with the same experience not long ago. It is about a month since I bleached the tooth and got it too white, but it has now pretty nearly reached its normal color. I think it acts very much as a natural inlay would. You may put in an inlay and have it too light at first, but in a few days it will assume the color of the adjoining teeth. Why it does so, I don't know. I think that principle applies to a tooth that has been bleached very thoroughly, dried out perhaps. I would like to say also that in the use of pyrozone, the 25 per cent. the cataphoric procedure is of very great assistance. I have in teeth that were very much discolored taken out the putrescent pulp and put an amalgam filling in, and in forty-five minutes to an hour and a half—at the longest two hours—I have bleached those teeth white enough for every purpose, so they could not be very readily detected from the adjoining teeth. In one case I bleached a lateral incisor that was very badly discolored in thirty five minutes with the cataphoric apparatus and a 25 per cent. solution of pyrozone. It was as near normal as you could possibly expect a devitalized tooth to become. The use of the cataphoric apparatus with pyrozone greatly expedites the procedure. So far as I can find, it is without any pain at all where the tooth is devitalized. Two or three patients have complained of a tingling sensation where the negative pole was placed, but no pain. It hastens the work very materially, and does not, so far as I can determine, do any injury to the teeth.

Dr. Goddard: I will ask Dr. Parker if he has any more difficulty in bleaching a tooth which is discolored yellow than one which is blue? I have a case at present which is yellow in color, and I have not been able to bleach it,

Dr. Parker: In answering I must say I have not observed any difference. It has never before been called to my attention.

Dr. Whitney: I would ask Dr. Parker how he proceeds when he has a metal stain to remove? I find the greatest difficulty in bleaching that class of cases—metallic stains.

Dr. Parker: I know of nothing that will remove a metallic stain from tooth structure, as, for instance, nitrate of silver or any thing of that sort.

Dr. Post: I think the peroxide of sodium will remove the stains of amalgam.

Dr. O'Connor: Mr. President, Dr. Parker stated in paper that he found oil of cassia produced one of the most difficult stains to bleach. If the doctor will try a solution of dehydrated turpentine, which can be had at the wholesale drug houses, I think he can most effectually remove the stain.—*Pacific Stomatological Gazette.*

ARTICLE III.

A CASE OF CARCINOMA OF THE LOWER JAW—OPERATION.

REPORTED BY A. FRANK KERNS.

[A committee of ten students from the Kansas City Dental College was invited by Dr. J. D. Griffith to be present at the Sisters' Hospital, Kansas City, Mo., at 10 o'clock, Saturday, October 2nd, 1897, to witness an operation to be performed by himself and Dr. J. D. Patterson for carcinoma on the lower maxilla of P. Kilmer, of Humboldt, Kansas. The committee went according to invitation, and found at the hospital Dr. T. G. Vernon, a dentist of Paola, Kansas, to whom we are indebted for at least a portion of the history of the case].

The patient, P. Kilmer, is a white man fifty-two years of age. He has a family consisting of a wife and two children. For the past four years he has lived on a farm, but the twelve years prior to that were spent here in Kansas City in the employ of the Pabst Brewing Co.

His present trouble began about one year ago, the first indications being a soreness and swelling of the lower jaw in the neighborhood of right bicuspids. About that time he happened to be here in the city, and thinking the swelling was caused by an abscessed tooth, he applied to Dr. Buchanan, a dentist, who found both bicuspids sound, yet quite loose. Dr. Buchanan extracted both bicuspids and Mr. Kilmer thought his trouble at an end. After going home, his jaw improved only for a short time and then began to grow worse. He doctored himself at home for a short time without being benefited. The inferior molars on the right side became loose, and he picked them out with his fingers.

About five weeks ago, while passing through Paola, Kansas, he went into the office of T. G. Vernon for examination. Dr. Vernon picked out a few small pieces of necrosed bone, and treated the opening with peroxide of hydrogen and other anti-home on account of pressing business, he returned in a few days receiving more ease than he had had for several months, although he had not experienced much pain at any time. Having to go home on account of pressing business, he returned in a few days to Paola for further treatment by Dr. Vernon. This time he remained at Paola for two weeks, during which period he seemed to improve. Having to go home again, he returned to Paola in one week. At this time Dr. Vernon took out quite a large piece of detached necrosed bone, and a further examination revealed a pathological fracture of the lower jaw, there being about one inch of the bone gone. The general appearance of the patient showed that he was very much worse, and Dr. Vernon advised him to come to Kansas City for treatment. In company with Dr. Vernon he came to the city October 17th, and was examined by J. D. Patterson, D. D. S. After a diagnosis of the case, Dr. Patterson decided that it was carcinoma; but, that there be no mistake, he sent a specimen to Dr. Newton McVey for microscopical examination. Dr. McVey only corroborated the decision of Dr. Patterson. A surgical operation was advised, and Dr. J. D. Griffith, who stands in the foremost rank as a surgeon, was chosen to perform the operation, Dr. Patterson to assist.

Upon the arrival of the committee at the hospital we found that the instruments needed for the operation were undergoing thorough sterilization by the method usually employed there, which is the use of a hot solution of boracic acid. These instuments were taken from this hot solution and deposited in another antiseptic solution, placing like instruments together, so that no time would be lost in getting the instruments needed. The doctors were very careful also in thoroughly cleansing their hands and making them as near aseptic as possible.

The patient was brought into the room in an unconscious condition, chloroform having been administered by means of the Esmarch inhaler. He was placed upon the operating table on his back, with a pillow under his shoulders and neck so that his head would drop back, thereby preventing blood from passing back into the trachea. Chloroform was then administered by means of a catheter placed in the nose and the air from the chloroform forced through it. Dr. Patterson extracted the remaining teeth on the right side of the lower jaw, consisting of the central, lateral and cuspid. The blood thus caused was taken from the mouth by means of a swab.

Dr. Griffith then passed a threaded needle through the middle of the tongue, by means of which thread the tongue was held forward, preventing its dropping back into the pharynx. He then made an incision from about the lower edge of the orbiculoris oris muscle in front to the point of the chin. An incision was then made to the right near the lower border of the body of the maxilla almost to the angle, thence upward along the ramus to a point in front of the lower part of the ear. In making this incision, and throughout the whole operation, blood-vessels were properly cared for, the principal one being the facial artery. After the healthy tissue had been dissected from the anterior part of the right side of the maxilla, a chain saw was passed around the bone and it was severed at the symphysis. Then the dissecting proceeded back along the body and ramus of the bone, taking with the bone all the diseased soft parts, until within about an inch of the condyle, where the bone was again severed by means of the chain saw, thus leaving only a small part of the right half of the bone. The edges of the remaining portions of the bone where it was severed were carefully smoothed, that the healing of the wound be not retarded, and all cause of irritation removed. While dissecting along the posterior border of the ramus, great care was taken that the carotid artery be not severed. An incision two or three inches in length was then made from about the angle of the jaw down the neck. A small pocket of pus was found underlying the sheath of the sterno-cleido-mastoid muscle. This was taken out and all the parts cleansed as thoroughly as possible. Iodoform was used freely and the wound stitched. There were only four or five stitches needed to close the incision on the inside of the mouth, and these were taken with ligature. Cat-gut was used in stiching together the external parts. Use was made of two drainage-tubes. The patient's head and neck were then bandaged, and he was removed to his room.—*Kansas City Medical Index.*

ARTICLE IV.

REMINISCENCES OF DR. BONWILL.

EUGENE S. TALBOT, M. D., D. D. S., CHICAGO, ILL.

In the death of Dr. Bonwill, the dental art, especially its mechanical department, has lost its most zealous worker. The dental profession never before possessed, and many generations will pass ere it will again possess, such a genius. Bonwill was a genius who could not only invent, but could simplify the principles of those already invented, so better results were more easily obtained. There is no more difficult problem in mechanics.

He was a decided enthusiast as to his profession. Every patient, no matter how poor, received his best services. Bonwill had no equal as an all-around operator. There are many dentists in the profession who are good operators, good amalgam or cement workers, good at regulating teeth, etc., but Bonwill performed every variety of dental operations perfectly.

It was my good fortune to be one of a committee of five (from the Section on Stomatology of the American Medical Association), appointed at the Philadelphia session in 1897, to visit his clinic on producing anesthesia by rapid breathing. Owing, perhaps, to lack of time and material, anesthesia was not employed. The committee, however, were repaid by a clinic it would be difficult to duplicate, The clinic was held at 9 a. m. (the only hour suitable for the committee), on the day subsequent to its appointment· Dr. Bonwill had collected forty-eight patients, ranging in age from 14 to 78 years. These patients represented the extensive field of his practice. They were from Delaware, New York City and Philadelphia. Every operation except crown and bridge-work was exhibited. "Pyorrhea alveolaris" was conspicuous by its absence. Every mouth was clean and healthy. Artifical dentures were accurately adjusted and articulation was perfect. Teeth, including the anterior lower, were built up and contoured with amalgam fillings. Spaces, clean and smooth, were noticed between all the teeth, points for which Bonwill was famous. His patients loved and admired him, hence his perfect control over them. A patient with an uncleanly mouth (no matter at what age) he would send away, telling him not to return until his mouth had been thoroughly cleansed, saying, "Then I shall be pleased to operate for you." He spent much time in teaching his patients prophylaxis of the teeth and gums. He had the rare satisfaction of being able to say that he did not know what it was to have a case of "pyorrhea alveolaris" in his practice.

His ingenuity was not confined to his specialty. He invented many useful things for general use.

Although Bonwill was not in the true sense of the word a pathologist, his genius often led him to appreciate patholcgic etiology. From this came his favorite theory that improper articulation and want of spaces between the teeth were the sole causes of "pyorrhea alveolaris." His farsightedness often reached beyond existing limits of dental practice. He was not a believer in crown and bridgework, because of the irritation produced about the gum margin and requirement of one or two roots doing the work of more. In place of this he built out the crown with amalgam, thus leaving the gum margin free, and inserted an adjustable plate in the place of bridge-work. Greater familiarity with the etiology of interstitial gingivitis will justify this conclusion of Bonwill and consequent change of methods of operation. His powers of minute observation rivalled that of Sherlock Holmes. On being introduced to a dentist, he would say, "Let me see your office," and thereby he would size up the dentist and his methods.

It was my pleasure to travel four months with Dr. Bonwill in Europe, whence came an excellent opportunity to study the man and his methods. From the day we left until the very hour of our parting at New York, Dr. Bonwill was busy. On shipboard he was continually writing. To his fellow-travellers he seemed the busy man in the party. He held clinics in nearly every country of Europe. At Moscow, six afternoons until after dark were devoted to clinics. The large room was packed to the door. Not one-tenth of those present could see a thing he was doing, but his presence seemed to attract those of the section. No one, not even Virchow or Lombroso, received greater attention at the Medical Congress than Bonwill. The ovation at the surgical banquet surpassed everything at the meeting. He was lifted from the floor and carried to his seat at the table upon the shoulders of his friends, both dental and medical. At Berlin, Leipzig, St. Petersburg, Stockholm, Bremen, Paris and London, he held most enthusiastically attended clinics. The large number present at these clinics and the presents he received are but slight evidences of the many friends he made while abroad.—*International Dental Journal.*

ARTICLE V.

DENTAL FEES.

Perhaps there is no class of professional men so much abused by the public generally for charging exorbitant prices as dentists, and it is certain that many times they are unjustly accused.

In discussing this question, I propose to do so quite briefly, and from a single standpoint, but not in any sort as an apologist. I come to claim boldly and unequivocably for the competent dentist a liberal remuneration, and it is believed that facts can be stated, appealing to the sense of justice of most individuals, which shall establish the claim of such dentists to the most generous compensation.

It must be remembered that the qualified dentist spends three or four years in preparatory study, and generally many years in establishing a reputation that shall bring him a remunerative practice. When this is accomplished, he finds himself embarked in one of the most trying and unhealthy occupations he could have selected.

The operative dentist is confined almost exclusively to his office, scarcely during the day getting a breath of pure, fresh air, while he is forced frequently to breathe an atmosphere absolutely contaminated, and that to a degree that must be experienced to be appreciated. He is constantly kept in a position the most tiresome and unhealthy, while the character of his labors is extremely exhaustive. Thus having been deprived of fresh air to breathe, of all healthful or invigorating exercise, the close of each day finds him wearied and prostrated, mentally as well as bodily. Still his labor for the day is not yet done. He has had no time during the day for reading or study, and must rob himself of needed recreation of the evening, or else of some portion of his equally needed sleep and rest, that this very important part of his duty to himself and his parents may not be neglected. Is it not clear, then, that the occupation of the dentist is necessarily an unhealthy one? If this is so, you will be surprised at the statement that very few dentists can continue in full practice for many years, without finding their health seriously impaired, or utterly broken.

It may safely be said that nine out of every ten dentists who have attained to anything like success or competence by means of their profession alone, have done so at the expense of their health. Either they have been unable to follow longer the practice of their profession, or they have followed it to so limited an extent that their income from it has proved but normal and very uncertain.

Now upon this statement of facts—and they are facts—is based the claim which has been asserted.

Not taking into consideration the high order of skill requisite in the dentist, a skill, which, when attained, must always command a high price, nor the fact of his almost entire exclusion from all out-of door enjoyments and recreations, but simply upon the ground of the absolutely unhealthy character of his occupation, and the almost certainty of the loss of health in obtaining a competence, is asserted of the skilled and competent dentist to a glorious reward.

Clearly, the dentist can only make provision for the future while his health and strength enable him to work, before those dark days come—which are so sure to come—days when he can no longer labor, and when perhaps his life will be a continual struggle with disease, engendered by his devotion to his profession. In a word, he must condense within the compass of a few years the labor and results of a lifetime.

I think I have made good the claim I have advanced, but if I have not at all, to those who are disposed to deny the claim, I have only to say, I wish they might have the personal experience, and they would accord all that is demanded in this article.

And now, kind reader, one word as to what prompted this article, and I have done. I know that the public, generally, do not understand this matter in its true light, nor could they be expected to. I know, too, that skilled dentists of established reputations will continue to charge high fees, and the public will continue to pay them—but I hoped in writing this article—basing the claim which I have endeavored to substantiate, upon what seemed to me to be its true and legitimate grounds—to establish a more kindly feeling between patients and their dentists than perhaps would otherwise have existed. I hoped, too, to induce some of my readers to believe that all dentists are not actuated by simply sordid motives. There are, perhaps, as many of the dental as of the medical profession who are impelled by high and noble motives, laboring assiduously and conscientiously for the alleviation of suffering and for the highest interests of their patients.

Asking you to give this subject a fair and candid consideration, let me believe that I have not wholly failed in my undertaking.—*Information.*

ARTICLE VI.

DENTAL SCIENCE IN 1480, AS EXPOUNDED BY PETER DE LARGELATA.

WILLIAM H. TRUEMAN, PHILADELPHIA, PA.

A work by Peter de Largelata, Master Surgeon, of Bononia, is the oldest printed book containing an account of diseases of the teeth that I have yet met with. The copy before me is dated Venice, September 12th, 1499, and is of the fourth edition. The Army Medical Library at Washington has a copy of an earlier edition noted in its catalogue, dated 1480.

The book contains 262 folio pages of very compact type, which is equivalent to about 500 octavo pages of a modern medical book; about five pages are given to diseases of the teeth. It is in Latin, and without illustrations. The title-page simply gives the name of the author and his title—"Cirurgia Magistri Petri de Largelata;" the title-gage as we now know it, giving at least an idea of the contents of the book, while not unknown, was not then in general use; it came a few years later. The catalogue of the Army Medical Library notes that the name is sometimes written "Argelata." I have been unable to gather any further information of the writer.

We may remember that the printed book was, on its advent, surreptitiously introduced as the work of the scribe, and was purposely made to conform as nearly as possible to those it supplanted. It was only when the market became glutted, and the price in consequence declined, that it became known as the product of the printing press. It was only when the art of printing had fully proved its superiority to the slow and inaccurate work of the scribe that the printed book began to assume, slowly, and step by step, the new dress its mode of production rendered possible. The printed book, as a printed book, made its advent about 1430, it did not, however, assume any great commercial importance until about 1450, when Faust and Gutenberg, at Mayence, made printing an important business.

In this book, as was customary in manuscript copies, the matter later placed upon the title-page is found on the first page, with nothing to distinguish it in either type or arrangement from other portions of the text, and reads, translated, "The beginning of the First Book of the Complete Teacher of the Healing Art, by Peter de Largelata, Master Surgeon, of Bononia." The next paragraph may be considered a preface; it reads, "Introducing for the fourth time, so satisfactory they have proved to my fellow practitioners throughout the world, the four Canons of Avicenna, as ordinarily accepted." He then thanks his patrons for the favor shown by so often calling for his book, and proceeds to outline its contents, Bononia now Bologna, is an ancient Italian city about eighty miles north of Florence, and was once an important educational center.

It is by no means a record of original research. He follows closely his Arabian master. His description of disorders of the teeth are scarcely recognizable by a practitioner of the present day, while his remedies, with but few exceptions, seem to be selected more with reference to the patient's imagination than for any special virtue that they may have had. Its peculiar type, abbreviations, obsolete words, and occasional typographical errors, make it a difficult book to translate. It is probable that older works than this, treating of our science, may exist, as it is known that very soon after the printing press was recognized, it was used to duplicate works on science and medicine, and long before the introduction of movable type, collegiate text-books were printed by the xylographic or wood-block process.—*International Dental Journal.*

ARTICLE VII.

POOR MAN'S CROWN.

DR. J. N. DAVENPORT, NORTHAMPTION, MASS.

The materials of which the finished crown is composed are an ordinary rubber, plain tooth, German silver wire hammered into shape that the opening in the root requires, and the ordinary vulcanizing rubber of any color decided upon. The *modus operandi* is very simple. The root-canal being first prepared, a plain, rubber tooth is selected and ground to the gum. The end of the root is ground fairly smooth, but one peculiarity about the method is that, if the palatine or lingual portion of the root stands rather high and is fairly strong, it is not necessary to cut it to the gum, as for most other methods it being possible to make the crown conform to any irregularity of the root. A piece of German silver wire, of suitable size, is hammered on the anvil to the proper shape and fitted to the root-canal. The hammering gives additional stiffness, and makes the wire so rigid that there is no possibility of bending it with the oridinary force which comes upon a crown. One end of the German silver is then made jagged with the file and passed between the pins of the tooth, which are bent to hold it. Red, pink or white vulcanizing rubber in small pieces is now packed upon the pins and over the wire with a warm instrument, and in sufficient quantity to form a shoulder which will cover the end of the root. This unfinished affair is then put into place, the pin going to its full extent into the root-canal, and the porcelain pressed to its proper position. Before it is put into place it is held over the spirit-lamp to soften the surface of the rubber, and the moistened thumb and finger will form the rubber by pressure accurately to the end of the root. It can be taken, the surplus of soft rubber trimmed off, and put back again, half a dozen times, if necessary, within a few minutes, until everything seems right, when it is finally removed, invested in plaster in the flask, vulcanized and finished. There are many ideas which can be applied to this method. It has been suggested by Dr. Davenport that wax instead of rubber could be used for the first fitting, particularly when two or three root-canals were to be used, and after everything was adjusted the waxed crown could be placed in the flask, the flask opened, the wax taken out, and rubber packed in. Then, too, bicuspids can easily be formed and made quite sightly by the use of white rubber for the inner cusp. These crowns should be secured to place with zinc phosphate.—*International.*

Monthly Summary.

HOW TO REMOVE A PIN CEMENTED TO A ROOT.—I asked this question of a professional friend recently, and he replied, "Extract the root and split it open." I thought this a little too heroic practice, and suggested a milder one. I had a practical case in hand, a patient who had broken a cemented pin at the junction of a common pivot crown with an upper right lateral root.

It occurred to me that a strong alkali ought to dissolve the phosphoric acid of the cement, and thus cause the disintegration of the filling. So I went home and threw the pivot crown, which was a part of the metallic pin, into a bottle of strong aqua ammonia and let it remain over night. Upon removing it, found the cement a complete mush, and easily removed along with the pin also. My patient called soon after, when, with a small abscess tubular knife in the engine handpiece, I cut the cement around the pin as far up as was expedient, and then with a fine pointed hatchet excavator proceeded to finish the operation, applying the aqua ammonia to decompose the remaining cement, and protecting the gum underneath with a piece of rubber dam covered with a napkin, stopping occasionally to rinse the mouth with warm water. After ten or fifteen minutes' manipulation, my efforts were rewarded by a slight movement of the pin, when I seized the end of it with a small pair of pliers and with rotary motion removed it.

I believe that oxyphosphate fillings last longer in mouths where there is an acid reaction of the saliva, and are less permanent where an alkaline condition prevails. This afforded me the hint, and the result was not unexpected.—William B. Mead, in *Cosmos.*

COMPRESSED CORK AND ITS USES.—Cork, as everyone knows, is one of the best non-conductors of heat or sound. That it has not been more widely used in building is due chiefly to the difficulty of obtaining it in an unadulterated form.

A product called cork tiling has recently been placed upon the market, which is made of what is known to the trade as "virgin cork," ground, compressed, and otherwise treated by a patented process, and which is free from the cement and glue usually employed to hold the particles together. We are informed that tiles made of this pure, compressed cork form an admirable flooring, which, besides being noiseless, water-proof, warm, and germ-proof, is capable of withstanding hard usage. By varying the degree of compression and modifying the manufacturing process slightly, sheets of cork different in color and density are obtained, which, when sawed and finished in the form of panels, can be used for wainscoting alone, or in connection with cork-tile floors. Cork compressed into sheets and sawed to the size and thickness desired constitutes a very efficient pully covering. It is said that a pulley covered or lagged with compressed cork will transmit from 50 to 60 per cent. more power with the same tension of belt than one having only a smooth iron surface.—Scientific American.

POINTS IN FAVOR OF THE USE OF ALCOHOL AND THEIR REFUTATION.—Dr. Beinfait examines point by point the various objections to total abstinence, and reaches the following conclusions:

1. Is alcohol a digestive? No, its digestion produces a passive excitation; interrupts the proper action of the stomach, because alcohol acts as an anesthetic after having irritated the walls of this action of the gastric juice.

2. Is alcohol an appetizer? No; it produces an excitation of the stomach which causes a sensation taken for hunger.

3. Is alcohol a food? No; it does not correspond to the definition of a food, and the heat that it seems to produce does not serve as actual warmth.

4. Is alcohol heating? No; it causes a flow of the blood to the skin and the lowering of temperature.

5. Is alcohol a stimulant? In no case, either physical or mental.

6. Is alcohol a protector against contagion? No; it predisposes the body to contagion.

7. Can we live without alcohol? This idea that we cannot live without alcohol is a prejudice that numerous facts contradict.

8. Is alcohol good for children? It should never be given children.

9. Does alcohol increase longevity? According to reliable statistics, alcohol diminishes longevity.—St. Louis Medical and Surgical Journal.

AN EVIL AND ITS REMEDY.—As we note the ever-increasing number of so-called "dental parlors," and see the columns of the daily papers disfigured by the advertisements of the disreputable practitioners of dentistry, it becomes more and more evident that the evil of dental quackery is rapidly increasing, and we are impressed with the idea that a remedy should be found to check its undue growth. It cannot be wholly eliminated, for while time lasts and men inhabit the earth, just so long will the unthinking and the credulous fall a prey to those who are unscrupulous and dishonest. So long as is inherent in the human heart the desire to get something for nothing, the man who offers to meet that want will secure patronage. But we believe that the growth of this evil as it relates to the profession may be checked very materially by insisting that our dental colleges demand of their matriculates a higher standard of preliminary education than is now generally required, and that throughout the entire college course of study they endeavor to impress on their students the value of the knowledge they are imparting and the absolute necessity for maintaining only clean and honorable methods of practice. Let only graduates of reputable colleges come before State boards of examiners, and make it necessary for all to do so; take the appointment of State board membership out of politics; make the college course extend over four years of nine months each; in short, raise the entire plane of the scheme of dental education, and we believe the percentage of those who resort to disreputable methods of practice will be reduced to a minimum. Legislation will not make men good, but education may.—Editorial in Pacific Stomatological Gazette.

PARALYSIS FOLLOWING GENERAL ANÆSTHESIA.—William M. Leszynsky ("Medical Record," October 21, 1899) says: The paralysis produced by pressure during anæsthesia is preventable in every instance. As a rule it affects the upper extremities. The serious attention of the surgeon should be directed to this class of cases. It is occasioned by the following conditions:

1. Prolonged elevation and extension of the arms, allowing the head of the humerus to make pressure on the brachial plexus.
2. Metal clamps or tight straps over the shoulders or lower extremities.
3. Extension of the head toward one side, thus stretching the nerve trunks and rendering them still more susceptible to pressure.
4. Placing of the arm under the head and retaining it in the same position.
5. Permitting the arm or leg to hang over the edge of the table, thus making pressure upon some individual nerve.
6. The elbows of the anesthetizer resting heavily in the clavicular region, pressing upon the brachial plexus.—*Chicago Clinic*

NEW METHOD OF TREATMENT OF WOUNDS.—Schleich, in his book on the treatment of wounds which has just appeared, has attempted to simplify the methods of miner surgery so as to make the general practitioner independent of what he calls the monopolization and centralization of surgery. He disputes the assertion that bacteria are the chief source of infection. He looks upon them as the accompaniments of uncleanliness of which their presence is sufficient proof, but he rejects the idea that they are the cause of sepsis and pyemia for the reason that these diseases occur in the presence of very different forms of bacteria. He supports his ideas by the citation of other illustrations. For example, characteristic fevers follow the ingestion of spoiled meat and fish although under these circumstances only small numbers of the ordinary streptococci and staphylococci can be shown to be present. Schleich insists that the operator should disinfect himself immediately after contact with infectious material, so that at any time he may be looked upon as nearly aseptic. Hand brushes he describes as universal labyrinths for grease and dirt. He rejects all sorts of chemical methods of purification partly because they do not destroy the bacteria and partly because they can not be thoroughly carried out. He advises a mechanical cleansing calculated to wash away the bacteria. He uses a "marble soap" which is made of a special alkali (steral) and contains marble-dust to take the place of brushes. After the hands are washed they are smeared with wax paste to close the ducts of the sweat- and fat-glands which no method is capable of disinfecting. In the treatment of wounds he has small regard for antiseptics which can only control to a limited extent the development of bacteria. He advocates an early and wide incision in suppurative processes and tamponade of the wound with gauze. He rejects all drains and uses silk instead of catgut, because he does not believe that the latter can be perfectly sterilized. He boils his silk and immerses it in gelatin to preserve it from infection. The gelatin is melted off with hot water at the time of use. He lays stress upon the necessity of introducing "homogenous substances between the edges of infected wounds. If this can be accomplished such wounds will heal in the same manner as healthy cut surfaces. Glutol, a dry and sterile formalin-gelatin, fulfills this requirement.—*Medical Progress.*

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, FEBRUARY, 1900. NO. 10.

Selections.

ARTICLE I.

WHAT ARE THE BEST MATERIALS FOR FILLING CHILDREN'S TEETH?

C. EDMUND KELLS, JR., D. D. S., NEW ORLEANS, LA.

A five minute paper upon such a prolific subject must of necessity be concise; hence to the practical treatment of the temporary teeth at once.

These will be divided, from a clinical standpoint, into class: A, good; B, bad; C, very bad.

Class A.—Good teeth, of course, are those to which, profiting by our teachings, the mother has given good care and the little patient brought to us at an early age, say two and a half years. At this period the teeth are in perfect order, clean and pleasing in appearance.

The patient is examined every three or four months, and from time to time a spot of decay may appear in the crowns of the molars, which is filled at once with amalgam, however tiny the cavity may be. At the same time, whenever necessary, all the exposed surfaces are polished with orange-wood and pumice, or the engine and a rubber cup may be used. The approximal surfaces are also kept bright by pumice and floss silk.

The incisors, under this care, remain perfect until shed. The treatment these teeth receive is mostly preventive, and the time (and money) so spent is well invested.

Class B.—These patients are brought to us probably after a night of suffering, and say at five years of age, and bespeak at once the neglect they have endured with compound approximal cavities in the molars, pulps nearly or quite exposed, and perhaps an abscess in progress of formation. The incisors also may be involved. The patient is not a type of good health, but nervous, and afraid of everything in the office, ourselves included.

The first step to be taken is to gain the child's confidence, which can only be accomplished by inflicting no pain at the first visit. Some small crown cavity (usually to be found) is slightly prepared and filled with cement, and the patient is greatly encouraged by the idea of having had a tooth filled without pain. By the time all the other work is completed, this filling? is to be removed, the cavity properly prepared and filled with amalgam.

The large compound approximal cavities are in due time prepared as thoroughly as possible, care being taken not to expose the pulps; they are cauterized one or more times with silver nitrate, filled with amalgam if safe, or, if not, with a chlorid of zinc cement. If all progresses smoothly, at the end of six months or a year they may be refilled with amalgam.

Sometimes, when the teeth are crowded, after cauterization, gutta-percha is packed into two facing compound approximal cavities, and allowed to remain for a month or more, when a filling can be more satisfactorily inserted.

If the pulps are exposed after the use of the silver nitrate, a cream of oxid of zinc and creasote is flowed over the exposed portion previous to the insertion of the filling.

These pulps, if thoroughly exposed, will die, but probably painlessly, and the tooth may remain comfortable for some time.

Any tooth in this condition at the age of five will not survive its period of usefulness, but must be lost sooner. However, if the second molars can be held in place, at almost any cost, until the first permanent molars have come through and are well articulated, this should be done, after which their loss is not so serious.

It is not my practice to fill the root-canals of temporary teeth, consequently the treatment of these teeth is merely palliative; when that fails to give relief, extraction is resorted to.

Class C.—Under this we will describe a poor little sufferer of two and a half years of age, with all the teeth "rotted to the gums," as we are told, and which description is in fact more accurate than elegant. True enough, the crowns are gone, but in many the pulps are still alive and exquisitely sensitive. Here nothing can equal the cauterization by silver nitrate, which, repeated at intervals, will allay the sensitiveness, and is all that can be done for the little sufferer.

When a girl who has been under my care since childhood marries, she is impressed with the necessity of caring for her children's teeth. She is taught to brush, not rub with a rag, the infant's teeth from the time of their first appearance; at first with clear water, and later, when the child is old enough not to attempt to swallow everything that is put in its mouth, with prepared chalk. Floss silk should also be passed between them daily, and when the child is old enough the mouth should be thoroughly rinsed with diluted lime water night and morning. This constitutes the care the mother is instructed to give the temporary teeth, besides which they should be sent to me for an examination three times annually.

The Permanent Set.—The judicious treatment of the first permanent molars is of paramount importance. In my practice there is a tendency to crowded arches, and very frequently the extraction of four teeth becomes advisable.

If the first permanent molars erupt in a defective condition, which they very frequently do, and break down immediately, they are nursed along until the patient reaches the age of eleven, and then extracted. Removing them at this age leaves the twenty anterior teeth for mastication, and allows of the eruption of the second molars in a perpendicular position and almost in the places of the first molars. Meanwhile the bicuspids have dropped back a little, and the entire arch at the age of fifteen is roomy and in good condition.

If the first molars are removed after the appearance of the second molars, these are sure to tip forward more or less, and the crowded condition of the anterior teeth is not so readily overcome, and together, a bad result is sure to obtain.

For nearly twenty years the judicious extraction of the first permanent molars has been practiced by me, and the satisfactory result so obtained is a daily object lesson among those patients who are still in my care.

When the first molars are good, one set of the bicuspids, either the first or second, are sometimes removed with the best results.

As the teeth of the permanent set are erupted they are watched carefully, at least two visits a year being insisted upon. The smallest pits that penetrate through the enamel are filled at once. If these occur before the teeth are fully erupted, they are filled with oxychlorid of zinc first, and later with amalgam or gold. If the teeth are soft, gold is never used. Amalgam is a very satisfactory material for the fissures of bicuspids of children.

Sometimes these buccal and fissue cavities are quite deep, though the enamel margins are quite hard; in which cases the cavities are lined with either gutta-percha or cement, usually the latter, and gold or amalgam completes the filling.

When all is ready for the filling, the cavity is swabbed out with creasote (Morson's only), and then dried with hot air. This will leave the walls in a glistening condition; and if any spot of decay or softened tissue remains, will at once discolor it, and it is removed.

When very deep cavites are found, the enamel borders are prepared thoroughly, but the decay over the pulp is not entirely removed, for fear of exposing the same. This is coated with a cream of oxid of zinc mixed with creasote, and dried and covered with oxychlorid. Later a part of the cement is cut out, and amalgam or gold packed over the remaining protecting layer.

The oxychlorid of zinc is a treatment of the tooth under which the tooth will improve. The zinc phosphate is a filling material only, porous to a certain extent, and does not benefit the tooth otherwise than serving as a filling material.

The approximal surfaces are watched carefully, and upon the slightest suspicion the teeth are wedged apart and the discoloration removed with fine polishing strips; after which the surfaces are brought to a high polish by the use of lampwick carrying moistened pumice. A carrier for this purpose, devised by my father some thirty years or more ago, I have never seen equaled, so I present one for your inspection.

Approximal cavites in children under fifteen years of age are never filled with gold, but with oxychlorid of zinc. Usually the dam is applied, the fillings inserted, patient seated in another room with a book or magazine for from forty-five to sixty minutes, the meantime being employed on other patients, and so is not wasted. The cement is then carefully finished, and paraffin burnished on with a hot instrument.

It is not unusual to find at the age of twelve or thirteen years cavities on the approximal surfaces of all the lower incisors, and even cuspids. Experience and observation have taught me long since that gold will not save such teeth at all, while the above treatment will. I have during this past month filled such teeth with gold for a miss of nineteen years, for whom they were filled with cement in May, 1888, or ten years ago, the cement fillings having wasted but slightly during all this time, and the teeth in the best of condition.

It is essential that a child be taught how to brush the teeth properly, and for this purpose I keep in my cabinet a tooth-brush and set of teeth mounted on continuous gum, and with which I gave a careful object lesson.

Finally, when all other work is completed, the teeth are thoroughly cleansed and polished, and great stress laid upon the necessity for the patient's keeping them in that condition.

I am told that the teeth of children in this section will not stand the same treatment as those in the North. Of this I know nothing personally, but of the utter failure of gold in children's teeth I do not judge by my own work alone. Scores of my little patients go off to school, and have gold fillings inserted by operators of the best reputations, which, however, soon fail. So my hearers of a distant clime must please bear climatic considerations in mind when criticizing my methods, and also my work when it falls under their view.—*Pacific Medico-Dental Gazette.*

ARTICLE II.

PERSONAL CARE OF THE TEETH.

A. H. THOMPSON, D. D. S.

It ought not to be necessary to urge that as the mouth, the oral cavity, is the gateway, the vestibule of the alimentary canal, wherein the food is received and partially prepared for digestion that is essential to the maintenance of life, that this cavity should be kept in a pure, clean and wholesome condition. But as it is seldom kept in such a condition, we cannot wonder that there should be so much disease in the human system, but rather that there should be so little. The mouth is too often neglected to such an extent that it is a perfect pool of filth, containing organic matter that is continually fermenting and putrefying, and vitiating not only the food and liquids that pass through the mouth, but emitting gases also which contaminate the air breathed into the lungs. Carious teeth and diseased gums also exude putrefactive secretions and gases, which pass into the stomach and lungs, and undoubtedly contribute to disease. But good Mother Nature is long-suffering and energetic, and carries well the burden of resisting the infection introduced every day by means of the food and water and air passing through this filthy gateway. There is little doubt but that the mouth, kept clean, and antiseptically clean, would do much to counteract, if not prevent, many general as well as local diseases of septic nature. This can be readily accomplished by careful attention to simple hygienic measures, whose efficiency is well understood, and which can be readily employed.

One of the first elements in the hygiene of the mouth is the proper care of the teeth, with a view to their preservation in a cleanly and wholesome condition. As is well known, the teeth of man, especially of the higher races, are in a degenerate condition as regards their structural integrity, and that, in consequence, they fall ready victims to the attacks of destructive diseases. Without artificial resources for their preservation, the teeth of civilized man would be lost at an early age in the average individual. As is well known, when the teeth are lost, or are inefficient for the duty of masticating the food properly, that it cannot be well digested, and that this leads to dyspepsia and all the evils that follow in the train of this distressing affliction. Therefore, physiologists say that the teeth belong to the alimentary system, and bear an important part in the digestive process. It is necessary that the food should not only be well masticated, but that it should be well mixed with the saliva by the same process.

The first step in the process of putting the teeth and mouth in a healthy condition is to have all cavities of decay filled, and the teeth carefully cleaned of all deposits about the gums, and carefully polished by a skillful dentist. Little can be done by the individual until the teeth are well cleaned with proper instruments, and all deposits of stain and calculus removed. Then they are in condition for the individual to take proper care of, and not until then. The hard calculus that accumulates under the gums and makes them diseased cannot be removed by the brush, but requires proper instruments.

The bacteria of decay collect in various places, especially in depressions and imperfections of the enamel where they are not easily disturbed, and become the nucleus of decay. Particles of food accumulating and decomposing also become centers of disease. Therefore, these accumulations should be removed, and the formation of incipient decay prevented as much as can be. The enamel should be kept polished, and the lodgment and ill-effects of deleterious material thereby rendered more difficult. To accomplish these ends, the most effective means is the use of a properly shaped tooth-brush and a polishing dentifrice, with an antiseptic wash. This is an operation that is simple, but is effective, although it is imperfectly performed by the average individual. Perhaps its very simplicity contributes to its careless performance. The proper kind and shape of tooth-brush has been much discussed, but there is no one kind or quality that is suited to the needs of every individual. For instance, the person whose teeth have rough enamel from long neglect or disease should use a flat, hard brush with sharp dentifrice until the enamel is well polished. But the next person, who, from long years of hard brushing, has well-polished enamel, with perhaps a tendency to receding of the gums, would have his teeth injured by this means. He would require a softer brush with a less sharp dentifrice. A very soft brush should be used only by persons with diseased gums until these are well, or during an illness, when the mouth and gums are very irritable. In a general way, the best form of brush is that which is curved from heel to point to fit the curve of the dental arch, and has transverse rows of bristles of unequal height to cleanse between the teeth.

The proper motion to be given the brush is also an important matter. The person with rough enamel should use the brush hard in every direction, but the one with well-polished enamel, with the gums receding from previous hard brushing, should carefully avoid the cross-motion and use the vertical movement; that is, the upper teeth should be brushed downward and the lower upward, away from the gums both above and below. The motion will cleanse the spaces between the teeth and prevent wear upon the prominent portions of the enamel and the gums. To accomplish this motion, which is a little difficult at first, the hand is rotated, thereby causing the bristles to pass from the gums toward the occlusal surfaces of the teeth, the ridges on the brush passing between the teeth and cleaning these surfaces thoroughly. The lingual surfaces are brushed upwards also as much as may be and the grinding faces transversely. The proper method of brushing the teeth is but imperfectly understood by the laity, and dentists do not, as a rule, give their patients sufficiently full instructions in regard to this important matter.

The next important matter is that of a proper dentifrice. This is supplied in the form of powders, tablets, pastes, soaps, etc. But the form of the preparation is of little consequence, nor is the color or flavor, except that it should be attractive and pleasant to use. A pleasant flavor is likely to be an inducement to children and weak-willed persons to use a dentifrice, and is, therefore, useful. A good dentrifrice is composed of polishing powders, antacids, antiseptics, and coloring matter and flavor. Soap is an ingredient that is more or less useful, but is liable to discolor the teeth by too prolonged use. Astringent gums are sometimes added, but are liable to be injurious to the gums by continued use. Patent dentifrices are, as a rule, to be avoided, for they are likely to contain chemical ingredients which whiten the enamel, but which will also corrode and injure it. Different persons require different qualities of dentifrice. The person with rough enamel needs a sharp powder, but this would be injurious to the person with smooth and well-polished enamel, for it would be too wearing. A softer powder is best for the latter. The occasional use of soap is permissible if desirable, but it does not take the place of a polishing dentifrice. Proper dentifrices should be directed by the dentist as suited to the needs of each individual.

The proper time to employ the dentifrice is in the morning, to remove the accumulations of mucus and stain of the night. The mouth should then be put in a clean and wholesome condition also, before introducing food into it, as a matter of decency. The dentifrice should be used plentifully by those with rough and stained teeth and where there is much disposition to the rapid accumulation of deposits and stain, but those with polished teeth, which are habitually clean because polished, should use the powder sparingly. There is much difference as to the rapidity of the accumulation of stain and tartar, and the amount of brushing and powder used must be governed accordingly.

The employment of an antiseptic wash is the next necessity in the proper care of teeth. As the mouth is a perfect aquarium of bacteria and germs which give rise to fermentation and putrefaction, it is necessary that a proper antiseptic wash should be employed in the cleaning of this cavity. For this purpose the water that is used should be as warm as can be borne by the mouth for its solvent and cleansing powers, to which should be added two teaspoonfuls to the glass of a proper antiseptic preparation. For this purpose the preparations known as listerine, euthymol, borolyptol, pasteurine, sanitol, etc., are the most agreeable and effective, but other antiseptic washes will answer as good a purpose. This wash should be used in the morning with the brush and powder and on retiring at night without the powder. It is during the quiet hours of the night, when the movements of the mouth are suspended, when the salivary glands rest from their duty of irrigating the mouth and particles of food that remain about the teeth to ferment and decompose, that the antiseptic wash is most useful and should be freely employed. Removing particles of food from between the teeth with the toothpick or waxed floss silk after meals is a necessary hygienic measure, that it may not be retained to decompose and become the seat of caries. The ordinary wood toothpick which is in such general use is more or less injurious, as it is liable to leave splinters between the teeth, causing irritation and disease of the gums. Persistent use of the wood toothpick also pushes up the gum and wears the teeth at the neck. The quil pick is better, but it is inconvenient and cannot be kept clean. A cheap toothpick that is tough and smooth is much needed. For ladies, of course, a toothpick is inadmissible, but they can use waxed floss silk, which is safer and more effectual for cleaning between the teeth.

Brushing the teeth after every meal is questionable, as it is apt to be hurried and hard on exposed surfaces and incomplete in others. Chewing gum after meals is better, as this cleanses the teeth and stimulates the flow of saliva, which passes into the stomach and aids digestion. This is especially desirable for children, but after meals only, as gum chewing is injurious at other times by exhausting the saliva, so that the mouth is deprived of this valuable digestive fluid at meal time.

Brushing as a means of cleaning the mouth is of advantage not only for the teeth, but for the gums, tongue, cheeks and fauces, which should be cleansed with the brush and the antiseptic wash as well. The brush should be passed over the gums, the spaces between the gums and cheeks and lips, the inside gum, the tongue, the sublingual space and the palate and fauces as far down as may be bearable. It will be found that the health of these surfaces will be much benefited by the removal of the accumulations that ferment and become offensive. When there is any catarrhal tendency, these accumulations become dangerous by infecting the air that is breathed into the lungs. Of course, at such a time there should be proper cleansing of the nasal passages and pharynx, but this should be supplemented by cleaning the mouth and fauces as well.

The teeth of children should have special care, that they may be kept in healthful condition, and the mouth should be kept clean and wholesome. They should be taught at an early age to use the brush and dentifrice and be made to feel that it is a reflection upon their personal habits of cleanliness to neglec it, as it is to have dirty faces; that a dirty mouth is as bad as a dirty face. It wlll soon become a matter of pride with them to keep the teeth clean. The black stain that accumulates about the margins of the gums on the teeth of children is best removed with a flat pointed stick and sharp tooth powder. The stain is common to children and does no harm beyond its bad appearance. Of course the antiseptic wash should be freely employed by children, cleaning and washing the mouth and throat with it morning and evening. If some should happen to be swalled, it would do no harm. Small brushes are made for children which are easily used in their small mouths.

During pregnancy and nursing the teeth require special care, for, as is well known even by the laity, the teeth undergo rapid decay during this critical period. It was formerly supposed that during this period the lime-salts were taken from the teeth and bones of the mother to form the osseous structures of the child, and that in consequence of this deprivation her teeth fell the ready victims of rapid decay. Recent investigations have demonstrated the fact, however, that the physical condition of the dental tissues are much the same during pregnancy as at other times, so that the old theory of weakened resistance is not tenable. We know now that the rapid decay of the teeth at this time is due to the peculiar composition of the oral fluids, which are acid and corrosive. It is well known that the entire physiological system of the woman is revolutionized at this time, and that her functions are greatly modified. Amongst other peculiarities is the production and prevalence, to a greater or less extent in the fluids of the body, of lactic acid, the acid of milk. This is present strongly in the fluids of the mouth, and lactic acid is most destructive to the teeth, on account of its affinity for their lime-salts. Indeed, it has been found by investigation that lactic acid is a most destructive agent created by the bacteria of decay. To counteract this destructive agent, therefore, the logical thing to do is to neutralize it and render it inert, if possible. For this purpose active antacids, such as chalk or magnesia, are employed during the entire period of gestation and lactation; prepared chalk should be packed about the teeth and left during the night, when the most destruction of tooth-tissue takes place, on account of the more active action of the acid during the hours of rest.

This will, to a large degree, counteract and neutralize the active effects of the acid condition and stop destruction of the teeth. Milk of magnesia is excellent for the purpose, as it clings to the teeth and forms a coating over the enamel and remains strongly alkaline. A strong solution of lime-water should also be employed during the waking hours at intervals, especially when the teeth feel rough and on edge. This special care will do much to counteract the acid condition of the mouth during this critical period and preserve the teeth, The dentist learns to dread the appearance of a patient who has just been through a pregnancy, as he is pretty sure to find that there is extensive decay, and that most of the dental operations in the mouth have been undermined by decay.

With persons who have soft or a more or less habitually acid condition of the mouth, the antacid treatment is often beneficial; especially is this the case during adolescence, when there is general weakness of the tissues, owing to the rapid growth and the changes of puberty. The teeth are still incomplete as to density, and special care will often tide over these critical years. As the teeth harden with advancement to puberty, they become more resisted and the fluids of the mouth are less corrosive. Some forms of dyspepsia are also destructive of the teeth, and in some forms of illness, as typhoid fever, the injury to the teeth on account of vitiated oral fluids is often very marked. Acid conditions prevail in many kinds of ill health which induce decay, but special care or special conditions will require special prescriptions, so that general directions can not be made of much value for such cases.—*The Stomatologist.*

ARTICLE III.

NERVOUS PATIENTS.

DR. WALTER F. LEWIS, CALIFORNIA.

We speak of a person as being nervous, or in a condition of nervousness, as indicating an abnormal condition of the nervous system, while it may mean a condition of health as well as disease, as, for example, we speak of a "man of nerve," a "strong nervous man," or a "weak nervous woman," according to the different acceptations of the word "nervous." The nerves are so intimately connected with the whole body that we ought to find healthy and vigorous nervous conditions in a healthy body, and *vice versa*, and this in a large measure is doubtless true; but there may exist an hereditary predisposition which interferes with the normal functions of the nervous system in an apparently healthy body, thereby causing us to estimate greater fortitude and power of endurance than the nerves will sustain. With the ancients the nerves were so intimately associated with the tendons and ligaments that nervousness indicated strength, etc.

Without, therefore, going into my homily upon the nervous system, I desire to make some suggestions that may be of value to us in our contact with that class of people whom I have pleased to denominate "nervous patients," those who suffer the most acutely, and make operaions in the oral cavity more difficult than any other class. The close relationship of the brain with the nervous system makes the dread of the operation almost as terrible as the operation itself. It goes without saying that the average patient dreads the dental chair. "I hate it, I hate it, and who shall dare to chide me for hating the dental chair?" is a sentiment which finds lodgment in the breast of all "nervous patients." The dread of suffering is greatly intensified by this condition, and suffering to such patients is one of the greatest factors in human experience. It enters into every avenue of life. It stands like a grim specter in every household. It looks upon every scene of joy and mirth. It enters into the palace and the hovel alike. The heart that throbs beneath ermine and velvet dreads it as well as that of the savage in his tepee. It comes unannounced in darkest midnight hour, and likewise under the blaze of the noonday sun. It is no respector of persons, breathing its blighting poison upon the helpless infant, as well as on the vigorous and strong. It lurks beneath the smile of the beauty of the drawing room, and shows its masked face behind the fervid utterances of the orator. It is not limited to space, but pursues its victim with relentless energy to the highest mountain peak or the lowliest vale, and it is this influence which causes our nervous patient to dread dental operations. The question naturally arises, "What are we going to do with these conditions which are not mere idiosyncrasies, but are conditions over which the patient can have no possible control?" We offer some suggestions which may or may not meet with your approval, but if they are instumental in causing you to give greater consideration to this subject, the object of the paper will have been accomplished. It is of paramount importance, when these patients present themselves for operations, to study carefully their peculiarities of temperament, habits of thought, etc. If necessary, humor any or all of their harmless whims, agreeing with them in so far as is consistent with true professional dignity, and above all strive to gain their confidence, without which it is hardly possible to operate in a satisfactory manner. Avoid all display of instruments or appliances which have a tendency to excite apprehension that pain lurks behind their use. Cultivate a bright and cheerful manner without descending to frivolity or buffoonery. Do whatever is required in a prompt and reliant manner, without any unnecessary motion or display. Make the sitting of such length as is compatible with the ability of the patient to bear the nervous strain of the operation. Never, under any circumstances, go beyond this limit. There are many operators who excel in manipulative ability, but are totally devoid of a proper discrimination as to the patient's power of endurance. How often we have heard the remark, "I sat in the chair three, four or five hours," or, possibly, "all day;" "had a dozen or more cavities filled, and was utterly used up for the week following." Such lack of judgment and proper discernment are on the part of an operator for a nervous patient's strength only commensurate with a blacksmith nailing the shoes upon the hoofs of a horse. In many cases these patients are suffering under an extreme nervous tension from the moment they are seated in the chair until the sitting is finished. Nay, more than that, the dread which has been constantly in their minds from the time the appointment was made until its fulfillment is a veritable nightmare filled with apparitions of dental engines, "dam clamps," hot-air syringes, nerve broaches, mallets, etc., so that they commence the sitting in a state of nervous suspense bordering on frenzy. With such patients half an hour or at most an hour is quite a sufficient tax upon their nerve capital, and should not be repeated oftener than once a week at most, unless the case is of unusual urgency, and even then it is of doubtful expediency. In case of a threatened nervous collapse, it is better to dismiss your patient, even though you have not ascomplished much. The next sitting will undoubtedly be more fruitful of results, besides convincing your patient that your interest in his welfare is not altogether measured by dollars and cents, Don't be afraid to exhibit proper sympathy unembellished with gush. Never say in a frigid tone that would "freeze up the pump," or "strike terror to the heart of a grindstone," "You must expect it to hurt; you can't expect to have teeth filled without pain." You might as well hit them over the head with an Indian war club, and then wonder that they shrink from your touch and manner. Be as gentle in your manner and touch as is consistent with thoroughness and quality of your operation. Do not become imbued with the idea that it is ever necessary to resort to harsh or heroic measures with such patients, either in your mental attitude or in the demands of the operation. You would better fill a tooth with gutta-percha, or some material easily inserted, than, with a mistaken conviction of excellence, set a bur tearing into sensitive tissues (for the sake of undercuts for a gold plug) that thrills and throbs through the whole nervous economy like an electric shock. While it is true that gold is the best material with which to fill teeth, there may be circumstances where its introduction could only be accomplished with dire results to your patient's nervous economy. The performance of the operation is not so important as the conservation of your patient's nervous strength. The necessity for inflicting pain must not be measured by the seeming ability to bear it. A shock given the nerve centers may produce results more inimical to the health of your patient than the presence of a dozen carious teeth.

While I am not prepared to endorse hypnotism in the broadest acceptation of the term, I nevertheless believe that much may be done to alleviate the fear of the nervous patient by directing his mind into channels entirely remote from the one which fills his whole being with a nameless terror—viz., the dread of the operation, If this should necessitate some outlay of mental effort upon your part, surely the end ought to justify the means. It is hardly necessary to direct your attention to the matter of externals in the way of appointment. That, of course, will be one of your fundamental requisites. An object may be of such a character as to catch the eye, and through that influence direct the thought away from unpleasant association, thus, in a measure at least, neutralizing the emotion caused by fear of pain. A picture suggestive of the beauties of nature—singing birds and blooming flowers—would be somewhat more appropriate than, for example, Pocahontas saving the life of Captain John Smith, or some equally pleasing theme.

The use of tonics, stimulants or sedatives in certain nervous conditions is not only permissible, but actually desirable, especially when it is necessary to carry the patient through an ordeal of pain such as the excavation of a hypersensitive tooth. Of course, their use should always be accompanied with intelligent and proper discrimination. It is well in some cases to prepare the patient for the sitting by the use of tonics administered in advance. There are many which will prove effectual in such cases; it is not necessary to specify any particular one, and as all operations in the oral cavity are in more or less degree surgical, it will be found desirable to employ opiates or anesthetics when circumstances seem to indicate their use.

My own experience leads me to believe that inhalation is attended with less evil effects than using the stomach as a vehicle to carry the drug into the circulation, as this method will prove a greater tax upon the system, while the effects will be of longer duration than is necessary. While many operators use morphine, Jamaica dogwood and other agents, my experience has been more satisfactory with chloroform, ether or nitrous oxide gas. Their use should be attended with great care, and only small quantities administered, especially chloroform, with which the results can often be attained by a few drops quickly inhaled, rendering the excavation of very sensitive dentine comparatively painless. In the use of all these agents, kind, quality and quantity must be regulated by the knowledge and judgment of the operator. Plenty of fresh, pure air, with abundance of sunshine, will go far towards dispelling fears and banishing the hobgoblins of dread in our nervous patients.

It would be difficult to outline a specific formula for all cases; there will be found peculiar phases of temperament in each case which claims our service. Consideration coupled with tact and skill will enable us to smooth many of the rough places in the path of this class of patients.—*Pacific Dental Gazette.*

ARTICLE IV.

THE CAUSE AND PREVENTION OF DENTAL DECAY.

GEO. HOWE WINKLER, M. D., D. D. S., NEW YORK.

Read before the New Jersey State Dental Society.

The cause of dental decay is a subject that has been so much speculated upon and theorized about that the discussion of it seems almost like the threshing over of old straw; yet the importance of the subject, especially in the light of recent publications, justifies us in continuing our investigations, more especially as we know that in the searching over of old materials new values are sometimes discovered. The farmers of the south for over one hundred years used the cottonseed for fertilizing purposes only, not realizing that the oil which these seeds contained constituted a crop worth several millions of dollars annually.

The various theories that have been held in regard to dental decay, involving the ideas of inflammation in the organic matrix of the tooth, as well as the bacterial destruction, have been advanced and maintained by their several advocates in arguments so convincing as to insure for each theory a large following. But these theories are incorrect, because they are conclusions drawn from the evidences found in the mouth where dental decay is in a state of progress and not in its incipiency.

The microscopic and clinical researches of Prof. Miller, of Berlin, and of Dr. Leon Williams, of London, and the profound and extensive experiments and deductions of Dr. G. V. Black, of Illinois, have fixed in the minds of most members of the profession the idea that acid producing bacteria are the cause of decay. There is no doubt that the very able experments and writings of Prof. Miller were absolutely accurate in stating conditions as he found them in the mouth, and the marvelously beautiful microscopic slides of Dr. Leon Williams show bacteria in their destructive work, but the conclusions which these gentlemen drew I am sure are wrong.

We know from their teachings that bacteria excreting acid and boring into the tubuli of the teeth are to be found in nearly all cavities of decay, but they are also to be found sometimes in limited numbers, and oftentimes of inoffensive character, in nearly all human mouths. Dr. Black engaged in the most extensive series of experiments and carried them out with a masterful intensity of purpose, and from the results drew conclusions that constitute, in my opinion, a most profound and able contribution to the literature of dentistry. Starting his research from the conditions in the mouth which are within the reach of human knowledge—chemical, microscopic—tangible—he worked up to the very portals of truth, when in speaking of the apparent lack of defensive proteids in the mucous secretions and saliva of some persons, and of the lack of the proteids at some periods and not at others in the same person, and especially of some ages, as of the years of puberty and of periods of pregnancy, he says: "Taking this view of the condition" (that is that the lack or presence of defensive proteids in the secretions of the mouth account for the destruction of the healthy integrity of the teeth, and that lack or presence is due to a constitutional condition) "dental caries becomes as truly a dyscrasia as rheumatism or gout," and he was absolutely right.

I purpose to show why I believe he was right, and to place it in the power of every dentist present to prove the truth of his conclusion in that particular.

DENTAL CARIES DUE TO DYSCRASIA.

Dental decay is due to a dyscrasia, which can be recognized in its incipiency by some of its symptoms only. The evidence of decay in the tooth is not the cause of decay, it is but the progress of the disease—the recognizable stage of the morbid condition, just as the eruption on a fever patient defines the character of the patient's sickness. The cause of dental decay is a condition in the system that is too subtle for human knowledge to grasp. The earliest symptoms of the dyscrasia that we can detect are discovered in the perverted secretions of the oral cavity, by means of litmus paper when acidity prevails or by the physical appearance of the fluids there, such as slimy deposits on the teeth, or saliva which is thick, ropy, gluey, as well as acid—sometimes by swollen, spongy, bleeding gums accompanying white decay—a disagreeable taste in the mouth in the morning, and at times an offensive odor on the breath. Similar stages of disease exist in the case of many sicknesses. A person sick with small-pox has the disease recognized when the eruption has become well developed, but the cause of that eruption was certainly in the system when the patient first began to feel droopy, or exhibited a slight condition of fever. The skin destroying pustules on the surface were not the cause of the smallpox. They simply represent a stage in the progress of the disease, which defines or classifies the dyscrasia. So it is with decay of the teeth. When we are able to see it, and under microscope find the acid-producing bacteria performing their functions—that is a stage in the disease, but not the cause of it.

TREATMENT FOR PREVENTION OF DENTAL CARIES.

The treatment of the dyscrasia which is the cause of dental decay is marked in some instances with such remarkable curative results and benefit that it simply corroborates what is here laid down, and elevates my deduction and statements from the realm of theory to the plane of fact. I am advancing no theory. I am simply stating facts which can be corroborated and proven by any one who will follow the accompanying directions for treatment. These conditions in the mouth must be treated from within, because they are not due to a diseased condition of the mucous glands or the salivary glands, but to the condition of the blood or the abnormal state in the system. The only way that the mucous glands could be arrested in their excretion of these viscid and foul exudations would be by destroying them, and that would not relieve the system of the condition. These glands in throwing out the perverted and viscous secretions are only performing the natural function of elimination, and they will continue to perform that function as long as the blood contains these poisonous products, and they themselves retain their health and power to work. When chlorate of potash, for instance, is administered internally, in a few minutes after the administration the drug can be found by tests in the saliva. That is certainly not due to any defect, or any disease in the glands, but to the condition in the blood, and the evidence of it in the saliva only ceases when the potash has been entirely eliminated. The treatment for the prevention of decay must be a treatment directed to the cure of the systematic condition, which is the incipient stage of the disease, and we must be guided in that treatment by the symptoms presented in the mouth. I administer internally for the prevention of decay but four remedies. These I give in homœopathic triturations, and generally in what is known as potencies—the two-hundredth being my favorite.

For corrosive acid excretions from the mucous glands which disintegrate and destroy teeth with a rapidity greater than can be produced by the aid of micro-organisms, the homœopathic trituration of creosote is a specific, administered in small doses, eight or ten doses per day at intervals of an hour when a low potency, such as creosotum 6, is used. If given in very high potency the remedy can be administered in one dose at night upon retiring, and one dose in the morning upon rising and before eating. The creosotum, in addition to immediately arresting the acid excretions of the mouth, produces a most wonderful and beneficent action upon the organic matrix of the tooth. Given night and morning in high potency to patients whose teeth are exquisitely sensitive it greatly relieves the sensitiveness, so that dental operations are rendered almost painless within a week's time while the dentine seems harder under the instrument.

For the white or light brown decay, found in the mouths of children or patients in their teens, and of pregnant women, the trituration of lime, carbonate of lime, calcarea carb., or phosphate of lime, calcarea phos., in alternation with creosote is wonderfully efficacious.

The carbonate of lime is the more valuable of the two lime preparations, and is designed more especially for patients who are inclined to be fair and plump with light eyes and hair. The phosphate of lime being more especially indicated in patients who are dark as to their complexion, hair and eyes, and tense in their fiber, rather inclined to be thin.

Carbo veg., or vegetable charcoal, in homœopathic trituration, is a magnificent remedy for patients suffering from swollen, spongy gums, which bleed at the slightest touch.

The appearance of the mouth in this class of etiological factors shows generally very slight inflammation, although the gums are sometimes swollen and bleed very readily, the entire mouth being bathed with a mild acid except after some minutes of mastication whereby the alkaline saliva has overcome the acid, and the teeth are affected by decay, more or less extensive, which is characterized by a very light brown or chalky white color, and by rapid progress, the patient generally being anæmic. The charcoal trituration not only relieves the mouth of its conditions, but brings a healthy color to cheeks and lips, proving itself a wonderful tonic to the blood.

The bichromate of potash or kali bich., is a specific for ropy, gluey, stringy, acid saliva, which pulls out in strings on one's fingers, and can only be expectorated with an effort.

I prefer as a rule to use the highest potencies I can secure, because their action is much more speedy than the lower potencies, and their administration is much more convenient.

A few granules of the specified remedy poured from a vial into the hand of the patient, and then taken on the tongue night and morning, is sufficient if the potency or trituration is as high as the two-hundredth or higher, and more frequently if the triturations are in the decimals, like 6x or 12x.

In conclusion I will recapitulate my statements:

The cause of dental decay is a dyscrasia or morbid state in the system.

It can be recognized in its early stages or incipiency by the perverted secretions in the mouth.

At this stage the dyscrasia is capable of successful treatment and cure by medicines internally administered.

The remedies neccessary to cure the dyscrasia and thus prevent dental decay are but four in number, and must be in the form of homœopathic triturations.

They are creosote, creosotum, for corrosive acid excretions.

Lime carbonate or phosphate—calcarea carb., or calcarea phos., for the light brown or white decay of childhood, puberty and pregnancy.

The bichromate of potash—kali bich., for ropy, gluey, viscid and acid saliva.

And vegetable charcoal—carbo. veg., for white decay, mild acidity of saliva, and swollen, spongy, easily bleeding gums, the patient presenting anæmic appearance.

This is my message to you to-day. It is not a theory. It a simple statement of facts; the truth of which can be easily demonstrated by every practitioner who will apply intelligently the above simple remedies. My own experience convinces me that at least fifty per cent. of dental decay can be prevented by the internal administration of these medicines.—*Items of Interest.*

ARTICLE V.

ROOT FILLING.

DR. W. R. RATHBONE, CUERS, TEXAS.

Dr. Maynard was the first to show, over fifty years ago, that most of the trouble resulting from the presence of a tooth in the mouth after the destruction of the nerve arose from the irritation produced by the matter contained in the pulp canal. To prevent this occurrence, therefore, he proposes filling the canals in such a manner as to completely exclude everything else.

Therefore, if the pulp has been exposed and is giving trouble, in my judgment it is the wisest, safest and surest plan to devitalize and remove same, this being the only course to pursue with a fair promise for satisfactory results.

The virtue of this operation was for a long time questioned by many, but same has now become very common, and is practiced by all skillful dentists.

Some operators drill out these canals, and thus give them the same diameter from the orifice at the pulp chamber to the apex of the root. This I consider a very dangerous operation, as the instrument may pass through the side of the root—especially should the root be curved. In a great majority of cases thoroughly cleansing the canal of all debris and decomposed dentine and slightly reaming out the orifice of the canal will be sufficient; which ever method is pursued care is necessary that the instrument is not carried through the foramen.

After having reached this stage we are ready for the selection of a proper filling material, etc.

A great many arguments can be advanced both pro and con in reference to most all root fillings, but from an experience of more than thirteen years I find I have been very successful in filling roots with oxychloride of zinc and cotton. Prof. J. Foster Flagg is a great champion of cotton as a partial root filling, and has used it very extensively. Absorbent cotton is not as desirable as the crude uncarded cotton wool. Dr. Flagg cites as a proof of the "impermeability of this material, when properly packed, that bales of cotton which have floated in sea water for long periods, when opened, show no evidence of moisture in their interior."

When you have, through patience and perseverance, accomplished all that is possible in the effort at the removal of nerve filaments, syringe well with water, dry thoroughly, and, as far as you can, saturate with camphophenique. It being a well-known fact that oxychloride of zinc preparations are irritating to the vital tissues, it is therefore, necessary that a barrier be placed between the paste and apex of the root. For this purpose I usually take a small piece of cotton not larger than a pin head, and moisten a little, and coat with campho phenique powder, then thoroughly pack this as near the apical foramen as possible. Ii is said that when the freshly mixed chloride comes in contact with the cotton it becomes converted into amyloid, which hermetically and permanently seals the apical foramen. The same change of course takes place in the cotton upon which the oxychloride is carried into position. A thin paste of oxychloride is mixed, into which you place a rope of loosely rolled cotton fibre until well saturated with same. The small end then carried into the canal up to the guard at apex with small round, smooth points very suitably made from piano wire and fitted into broache handles. When filled the surplus cement can be pressed out with bibulous paper. A tooth thus filled will not show the fibres of the cotton upon excavations into the cement after it has become hardened. I do not claim the cotton adds any to the properties of the oxychloride of zinc, but on the other hand I do not think it detrimental, and that the cotton fibre acts as a vehicle for the oxychloride, thereby avoiding the danger of leaving a vacuum in the canals caused by air bubbles.—*Texas Dental Journal.*

ARTICLE VI.

ORAL HYGIENE.

DR. WILLIAM OLIVER, SULPHUR SPRINGS.

To understand this subject well, we must first know what it means, then ask ourselves a few questions and find out how the results to be desired may be brought about. Oral hygiene means "the keeping of a clean, sweet and healthy mouth from youth up to old age," also, perhaps, less work withal for the dentist, but it would be more satisfactory to both patient and doctor.

We do not claim nor believe that it would be possible for one to be strict enough, however well drilled he might be on the subject, to prevent sometimes having trouble with his teeth. Hence we proceed to notice some of the most important (as I consider them) points on oral hygiene.

From the time a child begins to "cut its first teeth" its mouth should be looked after by one who is competent to judge of its necessities.

I say this advisedly; if I had not seen children's very first teeth ruined by rubbing through the gums with a thimble or a scalpel, breaking the enamel before they ever saw the light, I would not have mentioned it. This then would be the first point. Don't cut and slash the gums of an infant if it is not absolutely essential, and if it must be done, get a competent person to do it.

Another fruitful cause of diseases of the teeth in childhood is the eating of too much sweets, as candy, etc. For the health of both the body and the teeth the amount of candies should be limited and the little fellow trained to wash his mouth thoroughly with a suitable brush after eating it; also after every meal. If they are trained up this way they will most likely stick to it in after years.

As the years pass on people do things contrary to hygienics and injure the teeth. The human family never having been satisfied with "*means*" has always run to *extremes.* We eat food that would actually be more palatable merely warm, as hot as it can be gulped down. The same way with coffee or tea; then we tire of a hot substance and fly to ice tea, ice cream, etc., etc., thereby giving the teeth all the extremes of temperature possible, to say nothing of the abuse of nut-cracking and the eating of acids and condiments, and leaving particles of same on the teeth. Again, we sometimes see a person who never used tobacco (and that and snuff causes the loss of enough teeth), and who keeps his teeth clean and as white as pearl, suffer from the accumulation of tartar on the teeth and the diseases of the gums that attends this condition. This may, and I believe is, often caused by alkaline mineral water.

Another *common* cause of bad teeth is *deformity* of the maxillary bones or of the teeth. The bones failed to attain sufficient dimensions, causing malposition and early decay of the teeth. Of course the remedy and the only hygienic measure is for such a person to visit the dentist regularly and have the offending member drawn out, giving the others room, and make it possible to keep them clean. Last, and most important of all, comes the part the patient cannot do for himself. The most important part the dentist plays in oral hygiene. From some of the many causes always in operation the patient's teeth begin to break down and he seeks the advice of the dentist; and to undertake here to describe the various conditions met with and the remedy for each would be out the province of this paper.

Teeth should be properly filled and cared for so long as we can hope for satisfactory results, but we should not temporize too long, for after all an artificial set of teeth is more hygienic, safer for the patient's health and the dentist's reputation, than any set of natural teeth that persistently break down after being carefully and scientifically filled.—*Texas Dental Journal.*

ARTICLE VII.

AN EASY METHOD OF REFINING GOLD.

DR. A. D. HOOKER, SAN JOSE, CAL.

Since the introduction of crown and bridge work the busy dentist finds his gold drawer gradually filling up with scraps of gold ranging in quality from eighteen to twenty-four carats fine.

The work of refining gold by any of the ordinary processes is not only difficult for the average dentist, but it takes a great deal of time and skill.

The process of refining, to which we now desire to call attention, is very easy and simple. One which the student or office boy could work out with very little trouble.

It is briefly as follows:

Gather up all the old scraps and filings, carefully discarding all stray pieces of platinum which may be mixed with the gold. Take four parts of sheet copper to one part of gold scraps, melt all together in a crucible, or it may be done with the blow-pipe, with foot blower attachment, using a large piece of charcoal or asbestos cup to melt it. After the two metals have been perfectly melted and thoroughly mixed, cool off and place the mass on an anvil or swaging block, and with a four-pound hammer reduce to a thin sheet. Then run it through the rolling mill until the whole mass is as thin as tissue paper. Boil out in soap and water to remove any oil which may have gathered upon it during the process of rolling, Now cut the sheet or sheets of metal into narrow strips about one-fourth of an inch in width, and place them in an earthen vessel and set outside the office window. Pour into the vessel containing the metal sufficient commercial nitric acid to attack and eat up the copper, which it will do very quickly if everything is working right. After letting it stand a short time to cool, the acid may be carefully poured out so as not to disturb the gold which will be found in the bottom of the bowl or vessel.

At first sight one would almost believe that this black, dirty-looking deposit was worthless, and that the gold had been ruined by the refining process. It is only necessary. however, to carefully wash and rinse with clean water to bring the gold plainly in view.

Gather up fine dust, dry, melt and roll again into any thickness desired.

If every detail of the process has been well done the gold will be pure, twenty-four caracts fine, and as soft as lead.

In remelting and rolling clippings and scraps of twenty and twenty-two caract gold, which has been kept free from all other grades, we naturally expect it to work well without any refining, but it does not always do so. It will sometimes crack under the hammer and act in a fractious manner under the roller.

To make this again ductile and pliable it will only be necessary to place it on a piece of charcoal (first making a cone-shaped depression in it.) And with the blow-pipe melt and boil it till very hot, and while it is still boiling throw on to the molten mass a small piece of corrosive sublimate followed by a little saltpetre. This will clean it up and make it again pliable.—*Pacific Medico-Dental Gazette.*

ARTICLE VIII.

WHY THE BETTER ELEMENT OF THE DENTAL PROFESSION DOES NOT APPROVE OF ADVERTISING.

E. BALLARD LOEGE, D. D. S.

It is a misfortune that in dentistry, as in other professions, there are two classes of practitioners, viz. : the non-advertising or professional, and the advertising or unprofessional.

These may be classed as the true and false elements of the profession. Just as in medicine we have the quack and in law the shyster, so in dentistry we are menaced by the advertiser. Now it is a fact that the popular mind does not understand why it is not ethical and right that a dentist should advertise in the public prints. In the commercial world printers' ink and aggressiveness are right and proper; but, in the profession of dentistry, to be over zealous in proclaiming one's self is not only immodest, egotistic and undignified, but is synonymous with charlatanism. You agree, perhaps, that a young man just starting in his professional career would starve to death if he did not resort to advertising as a means of putting himself before the public. Fortunately, such is not the case. There are other and better methods of winning public favor than by the methods employed by a class of practitioners herein dealt with.

A man is permitted by the ethics of dentistry to insert in the newspaper his business card, provided he confines himself to his name, his business and his address, but just as soon as he goes farther than this he is in danger of compromising himself, if not of committing professional suicide. It may be that considerable patience may have to be exercised on the part of the young dental practitioner, as in all professions it is exceptional for one to escape the so-called starvation period. But when the facts are made clear I am sure you will agree with me that a dentist can not afford to do an advertising business; surely he can not if he loves the profession. The truth is a man can not advertise so that it will result in financial gain unless he resorts to exaggeration of his capabilities, or make it appear that he can do for his patient what his brother practitioner cannot do.

This is taking undue advantage, and the man who thus plants himself before the public, the man who would be this extraordinary phenomenon, degrades himself and his calling and is an outcast so long as he persists in those methods. It is absurd to imagine that a man who thus poses before the public, will render a service to his patient superior to that of the more modest, more conscientious practitioner, who is wise and honest enough to acknowledge his own limitations. If, for example, it is possible for a pretender to extract a tooth without pain and with anesthesia, local or general, is done many times, is it not quite as reasonable to expect a reputable dentist to do so, and would you not expect such an one to be just as thorough in his operation, and to take just as strict measures to prevent infecting his patient with an unclean instrument or an unsterilized solution ? I mention this latter because two cases of necrosis of the jaw have been brought to my attention, the unfortunates having been infected at institutions of quackery. There seems to be a popular impression that the non-advertising dentist is not "on to the trick" of doing certain operations which are done successfully (?) by advertisers; but permit me to assure you that the most progressive dentists, and those with whom it is most safe to entrust your welfare, are the men who love their calling too much to jeopardize their patient's health for the sake of the dollar. And it is most absurd to think that just because a man does not inflate himself like a toad in a marsh, and make a loud noise he cannot be capable of good work. It is much to be deplored that so many intelligent persons will allow themselves to be duped by such advertisements, as are seen in the daily papers and on billboards, telephone poles and fences. I believe it was Barnum who said "the American people like to be humbugged," and it seems as if this were pretty true when we see how many persons go to the advertising "parlors" for their dentistry. It is true, however, that they do not as a rule continue to patronize the same institution. Advertisers are dependent largely upon a transient class of practice. Oftentimes these institutions of quackery are conducted by men who have had no professional training whatever, but who thoroughly understand the principles of business. Such a man will employ dentists on a salary and the prime idea of this employe is to turn out work, and with less regard to the quality than the quantity of operations performed. I am personally acquainted with a dentist in this city who left a place of the above description—a place well known for its advertising propensity, who told me that while receiving a fair salary he could not be dishonest enough with his patient to please his employer. This young man is now conducting an honorable private practice.

To conclude—respected reader—remember that the so-called cheap is very apt to be expensive in the end, and that when dental operations are in question, the best service is always the cheapest. Therefore, if you are wise, entrust yourself to a man who is willing to win and maintain his reputation by the character of his work, and one who does not feel the need of obscuring his identity by the name "dental parlors."—*Information.*

Communicated.

THE INTERNATIONAL TOOTH CROWN COMPANY VS. KYLE.

INTERPRETATION OF THE DECISION.

Since the recent decision in the International Tooth Crown Company's suit, we have received many letters and inquiries from dentists, in various parts of the country, asking for information respecting it.

These inquiries plainly indicate that there is a very general misunderstanding among the dentists as to the nature of the decision.

The idea appears to be prevalent among the profession that they, as individual dentists, are liable for work which they are now doing, and that the decision covers crowns of all sorts, including porcelain, as well as solid gold or cap crowns, whether used singly or in bridges.

As this wide-spread misconception affects the sale of certain articles made and sold by this Company, we have thought it proper to make a statement of facts. We therefore publish the following opinion of our counsel, Messrs. Fraley & Paul:

No. 929 Chestnut Street, Philadelphia.

THE S. S. WHITE DENTAL MANUFACTURING COMPANY.

Gentlemen.—As requested by you, we have carefully examined the recent decision of the United States Circuit Court for the Southern District of New York, in the suit of the International Tooth Crown Company against James Orr Kyle. The patent sued upon is that of James E. Low, No. 238,940, of March 15th, 1881, the claims of which are as follows:

1. "The herein described method of inserting and supporting artificial teeth, which consists in attaching said artificial teeth to continuous bands fitted and cemented to the adjoining permanent teeth, whereby said artificial teeth are supported by said permanent teeth without dependence upon the gum beneath."

2. "An artificial tooth cut away at the back, so as not to present any contact with the gum, except along its front lower edge, and supported by rigid attachment to one or more adjoining permanent teeth, substantially as and for the purpose set forth."

Without attempting to discuss the patent at length, or to define what possible construction could be put upon the claims, we point out that it only covers dental *bridge-work*, and not a single crown, of themselves.

We think it proper to call attention to this point, because a person hastily reading the second claim might possibly think that it covered an artificial tooth cut away at the back, irrespective of its attachment to adjoining natural teeth. Such, however, is not the case, and it is perfectly clear that the Logan crowns and the Evans crowns, sold by your Company, are not in the least affected by the decision.

The patent expired on the 15th of March, 1898, and consequently no one can be held liable thereunder for bridge-work made since that date, nor can any injunction hereafter issue to restrain a dentist from using the invention set forth in the patent, as it is now public property. His utmost liability would be for bridge-work done during a period beginning six years before the day the suit was brought, and ending on the 15th of March, 1898. This can now only be recovered by a suit before a jury, as distinguished from the somewhat lengthy and expensive procedure in equity.

We have made this brief statement as to the liability of dentists for past use of the invention, as a matter of general interest, but so far as your own position is concerned two things are perfectly clear. *First*, that the Logan and other porcelain crowns, and the gold cap crowns, sold by you, are not of themselves, and never were, within the claims of the patent, since the latter only covered bridge-work; and, *Second*, that at the present time any one is free to use artificial teeth of various kinds for bridge-work, without liability under the Low patent above referred to.

FRALEY & PAUL.

December 12th, 1899.

THE S. S. WHITE DENTAL MANUFACTURING COMPANY. —*The Dental Cosmos*.

INTERNATIONAL DENTAL CONGRESS.—REPORT OF TRANSPORTATION COMMITTEE.

The Sub. Committee on Transportation has completed arrangements with the well known tourist firm of Thomas Cook & Sons, 251 Broadway, New York, so that dentists who expect to attend the Congress to be held in Paris, commencing August 8th, 1900, may secure for themselves and family's, steamship and railroad tickets and hotel accommodations at the minimum of expense and trouble.

In making these arrangements the committee has taken into consideration that while some of the delegates may wish to secure only transportation from New York to Paris and back to New York, many delegates will wish to visit other parts of Europe during the summer and they have planned the following tours to assist such in the selection of a trip that the time at their disposal and their means will suggest.

TOUR 1.

a. From New York by Red Star Line Steamer "Friesland" on July 18th, for Antwerp, thence rail via Brussels to Paris returning same way to New Nork. First-class passage providing berth at minimum rate for two berthed room, $157.85.

If traveling second-class from Antwerp to Paris and return fare would be $4.65 less.

By traveling on steamers "Kensington" or "Southwark" of same line, fare would be reduced.

b. Via Cherburg (North German Lloyd Service).

From New York by North German Lloyd Steamers "Barbarosa" and "Friederich de Grosse," sailing July 12th, and 19th, respectfully, for Cherberg, thence rail to Paris and return same way, (twin screw service only). First-class passage, providing berth in room for two persons, (minimum rate), $177.00.

c. Via Cherburg, (Hamburg American Line Service).

From New York by Hamburg American Line Steamers "Pennsylvania" and "Pretoria," sailing July 14th and 21st, respectively to Cherburg, rail to Paris and return via Boulogne-sur-mer and Hamburg American Steamer, (twin screw service), to New York. First-class passage providing minimum fare for berth in room for two persons only, $184.25.

Lower fares can be obtained if occupying berth in room with two or three other occupants.

d. Via Boulogne-sur-mur (Holland American Line).

From New York by twin screw steamers "Potsdam," "Statendam" and "Rotterdam," sailing July 7th, 14th and 28th, respectively, to Boulogne-sur-mur, thence rail to Paris and return same way to New York. First-class passage providing minimum fare for berth in room for two passengers, $163.00.

If traveling second-class from Boulogne to Paris and return, fare would be $3.80 less.

Lower fares can be made by leaving on steamer "Sparndam" July 19th.

Tickets can also be arranged via Southampton or Liverpool at proportionate fares.

TOUR 2.

To provide hotel accommodation in Paris for two weeks, (14 days and 13 nights) at Grand Hotel du Trocadero, carriage drives for three days, including excursion to St. Cloud and Versailles, 20 tickets of admission to exposition and transfer to and from railway station to hotel, $65.00.

TOUR 3.

One week's tour to Switzerland from Paris, visiting Lucerne, Interlaken, Thun, Berne, Lausanne, Lake Leman, Geneva, including hotel accommodation, sight seeing, etc., second-class R. R., $50.00.

TOUR 4.

One week's tour from Paris to Mayence, thence steamer on Rhine to Cologne, rail to Amsterdam, The Hague, Rotterdam, Antwerp, Brussels, Harwich, London, including second-class railway travel, first-class on steamers, hotel coupons, (3 meals per day, with lodging, $42.50.

Those traveling via Cherburg can return by steamers of same line from Southampton and so make short tour from continent through England in connection.

There is a U. S. revenue tax of $5.00 upon each ticket regardless of the number of passengers in whose name it may be made out.

Should any one wish to make a longer tour than any of the foregoing, or one with a different route, Mess. Cook & Sons have such a large variety of tours already planned that there need be no difficulty in making a selection to suit the taste, means or the time at the disposal of any one.

The war in South Africa has caused the withdrawal of many of the English steamships. Passenger accommodations across the atlantic will be less than usual this summer, while the Paris exposition is attracting great numbers so that the committee wish to impress upon delegates the great importance of securing their steamship accommodations at once.

Address all communications regarding steamships, railroads, hotels, etc., to Mess. Thomas Cook & Sons, No. 251 Broadway, New York.

A. W. HARLAN,
W. E. GRISWOLD,
W. W. WALKER,
WILLIAM JARVIE, Chairman.
Transportation Committee.

KENTUCKY STATE DENTAL ASSOCIATION.

Louisville, Ky., February 2, 1900.

Dr. Richard Grady,

Dear Doctor :—I wish to call your attention to the change of date of the meeting of the Kentucky State Dental Association. On account of change of meeting of Confederate Association, and for the purpose of getting railroad rates, we too have changed our date to May 29, 30, 31. We have some thirty papers promised for the meeting and nearly as many clinics and we will still add others to the list. Please be kind enough to announce this change of date and give us as much other notice as you deem wise. We have men on the programme from about twelve states. Don't fail to come and meet with us and we promise you a fine time.

Yours fraternally,
F. J. Gardner, D. D. S.,
Secretary.

The Board of Dental Examiners of the State of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, May 8, 9, and 10, and in Philadelphia June 19, 20 and 21.

Application for examination must be made to the Hon. James W. Latla, Secretary of the Dental Council, Harrisburg, Pa.

G. W. Klump, Sec'y,
Williamsport, Pa.

Obituary.

BENJAMIN H. CATCHING, D. D. S.

His many friends and the dental profession at large will learn with great regret of the death of Dr. Catching, of Atlanta, Ga., so well known through his numerous contributions to dental literature. For many years he has suffered from attacks of nervous exhaustion, the result of too ardent a devotion to work in the many spheres of activity in which his energies were expended. No one thought, however, and probably he least of all, that under the strain the end of all labor for him would come so soon. It was early in the morning of November 23d, 1899, just as he was about to leave his home to enter upon the duties of the day, that the stroke came, and within five minutes of the apopletic seizure all was over. "The silver cord was loosed and the golden bowl broken."

Benjamin Holliday Catching was, at the time of his death, fifty-one years of age. He was born June 28th, 1848, at Georgetown, Miss., of an ancestry distinguished for honorable service in the history of the State, his great-grand-father, Hon. Benjamin Catching, having taken an active part as a delegate in the convention which framed the original State Constitution.

Under the preceptorship of Dr. J. S. Knapp, of New Orleans, La., he began his study of dentistry, and later matriculated in the Baltimore Dental College, from which institution he graduated with distinction, and as valedictorian of his class, in March, 1870.

In the autumn of 1871 he entered upon active practice in Canton, Miss., where he remained until 1881, at which time, attractee by the superior opportunities as a field for practice offered by Atlanta, Ga., which had just entered upon its epoch of almost unprecedented growth and prosperity, he removed to that city, and there remained up to the time of his death.

Although he secured a large practice his predilection for literary pursuits soon led him into the field of journalism. He was the founder, and for eight years the editor of the "Southern Dental Journal." On retiring from that position he began the publication of "Catching's Compendium of Practical Dentistry," which furnished annually during the five consecutive years of its publication a most valuable compilation of all the important contributions to dental art and science made in this and foreign countries. It was by this work that he was best known, and it undoubtedly constituted his most important service to his profession. After the appearance of the fifth volume, 1896, ill-health from overwork compelled the discontinuance of its publication; and, with the exception of an occasional contribution to professional journals, he desisted from all literary labor until 1897, when he established the "American Dental Weekly." But, even with the aid of five colaborators, the labor involved in this publication was so enermous that the task proved beyond his strength, and with the issue of the fifty-second consecutive number the journal was discontinued.

He was ex-President of the Southern Dental Association and a member of the American Dental Association, which two organizations are now merged in the National Dental Association. He was also a member of the Georgia State Dental Faculty, and for four years served as a member of the Georgia State Board of Dental Examiners.

Dr. Catching was deeply religious in his convictions, and an active member of the Methodist Church, He was upright in all the relations of life, a good citizen, a devoted husband, a kind father, a Christian gentleman.

He was married June 15th, 1870, to Miss Mattie Sanders, of Georgetown, Miss., who, with a son and three daughters, survives him.—*Dental Brief.*

RESOLUTIONS ON THE DEATH OF DR. BONWILL.

ACADEMY OF STOMATOLOGY OF PHILADELPHIA, PA.

The committee on resolutions upon the death of Dr. Bonwill beg leave to submit the following :

WHEREAS, W. G. A. Bonwill, D. D. S., a member of the Academy of Stomatology, has been removed by death, it becomes our mournful pleasure to make record of his worth; therefore, be it

Resolved, As the sense of this society that in the death of Dr. Bonwill the academy has lost a distinguished member and the dental profession one of its best known followers,

As a man Dr. Bonwill was genial and affable, though often misunderstood. As a dentist he was skillful and conscientious. As an inventor he had no superior in the dental profession. As an enthusiastic worker in the field of dental advancement he had few equals.

Entering upon the study of dentistry at an early age, and under pecuniary disadvantages, he worked his way to success and eminence by burning zeal and untiring industry. His temperament was such that he could not be idle, and while others slept he was awake and working out problems which have made his name famous throughout the dental world.

As fellow comrades, marching to the eternal world, we shall miss Dr. Bonwill from our ranks. Let us therefore loiter for a moment on the busy highway of life to hang one garland on his tombstone.

Resolved, That a copy of these resolutions be engrossed upon the records of the academy, and additional copies sent to his family and the dental journals.

EDWIN T. DARBY, Chairman,
JAMES TRUMAN,
I. N. BROOMELL,
HARRY B. HICKMAN, Secretary.

Editorial, Etc.

THE PROFESSION'S FRIENDS—THE S. S. WHITE CO., AND THE INTERNATIONAL TOOH CROWN CO.

Our attention has beeen called to a recent circular sent out by the S. S. White Co., which professes to be an interpretation of the decision in the recent case of the Crown Co., vs. Jas. Orr Kyle, the defendant in the Crown Co.'s last suit. This circular is unfair, tricky and misleading. It is intended to convey the impression that the dentists stand in no danger of litigation from the International Tooth Crown Co., except upon the Low bridge patent, which expired in March, 1898, and that they are in very little danger from even that patent.

Nothing is further from the truth. The Crown Co., have at least thirty-eight patents, for the most part unexpired, relating to crown and bridge-work and other artificial dentures. The settlements that have been made thus far by the Crown Co., with certain members of the Protective Association, and the release and license given, relate to fifteen patents only. This bears out our previous statement and confirms the charge of misrepresentation against the S. S. White Co., in their circular.

From a reading of said circular it would appear that its sole object and intention is to discourage the non-members from uniting with us in the Association, and to intimate to the members that they have been frightened into joining when no danger existed of their being sued.

Every dentist knows that he cannot be held for work infringing on a patient after it has expired. This has been frequently stated by us in public meetings and circulars, and we have also stated the length of time for which the profession are liable, in case the patient should prove valid.

It has been impossible for us to make any distinction between dentists who were old in the manufacture of bridge-work and the younger men who had used the method but a short time before the patent on it expired. The longer time and more work a dentist did the larger amount the Crown Co., could collect from him, but a man who infringed a patent one day before its expiration could be held for one year's license and royalty.

The S. S. White Co., circular intimates that the whole matter is too trifling for the dentists to take any interest in. We would merely point to the twelve year's litigation which the Protective Association has had with the Crown Co., and with several other patent organizations, and the fact that although this patent has expired for nearly two years the Crown Co., are far more active in the bringing of suits against the dentists for past royalty and license fees than they were before the patent's expiration. No one knows better than the officers of S. S. White Co., and their attorneys that no more harrassing form of litigation can be put upon the dental profession than the numerous suits which are now being brought in various states. The pretended fear of the S. S. White Co., that they or some of their patrons would be sued by the Crown Co., because of the manufacture and use of "the Logan and other porcelain crowns, and the gold cap crowns" sold by them, is not only insincere but ridiculous.

The action of the Tooth Crown Co., in attempting to intimidate members, and the cause taken by their apparent allies, the S. S. White Co., have been so contemptible and misleading that we feel strongly tempted to open wide the doors and give every dentist in the profession, who has not already done so, a chance to join the Protective Association. The books were closed at the solicitation of the membership, but several prominent members and societies have suggested that to reopen the doors might perhaps after all be the wisest course. Our inclination has always been not to limit protection, but the members objected, and rightly, to paying for the defense of those who contributed nothing.

The action of the S. S. White Co., in this instance is in strict accordance with their past methods. The Trust sees the menace to its interests in having the profession banded together, and while they dare not come out so openly, and through their traveling salesmen misrepresent and belittle the Protective Association as they have done in the past, they adopt a more subtle and contemptible course of warfare against our organization. If the S. S. White Co., think the Protective Association is on the right track, why do they not come out and say so? Or if they really believe the malicious statements which they have circulated about us, why have they not the courage of their convictions to openly denounce this organization?

We shall shortly carry the war into the enemy's camp, and issue a detailed communication, showing in small part the vast sums of money which the S. S. White Dental Mfg. Co., has mulcted from the profession in the shape of royalties upon worthless patents, and furthermore, expose the various subterfuges and ledgerdemain which that company makes use of to conceal the fact that the money is so taken from the dentists. Unlike our traducers, we have facts upon which to base our accusations and not draw upon imagination.—*Dental Digest.*

Monthly Summary.

SOLID CAST GOLD CUSPS FOR CROWNS.—Some time since I was present at a jewelers when a gentleman came in with a pair of link cuff-buttons, and asked the proprietor if he could duplicate them. The jeweler replied that he would try to procure from the manufacturers the duplicate design, but that he doubted that he could purchase it, as the dies were probably laid aside for more recent designs.

The gentleman expressed his desire to have it duplicated, and the jeweler replied that if he could not secure it at the manufacturers he would make one himself. "But if I make one it will contain much more gold and be much heavier than these." "All right," replied his customer. "I am particular to replace the one I lost, as it is a keepsake."

The next evening I saw the finished ornament—a beautiful piece of work. Handing me the eyeglass, he requested me to detect the difference between the die-struck one and his duplicate of it. To the naked eye it was perfect, and the glass showed a remarkably sharp casting that was built little different from the work of the hydraulic die-press.

He then showed me the process, that struck me is of value to dentists who may need a solid cusp crown, or even to make a casting for several teeth in case of a bridge. He takes a piece of cuttlefish bone, such as sold for use in bird cages, and dresses the soft side flat with a coarse file—a rubber file will do it nicely—and presses the piece he wishes to duplicate into it to the required depth. Another piece of cuttlefish bone, filed flat, is placed over it, and a hole is gouged out in the first piece with a channel to the mold thus formed. The two pieces are then wired together, and scrap gold placed in the second hole is melted with the blowpipe; and when at proper heat the mold is filled and the cast is made.

With the excellent steel dies that we now have it is the work of but a few minutes to make a cast cusp by this method, and even a natural tooth would make a mold that would be desirable, as it would duplicate exactly every cusp and fissure.

From this suggestion it is but a step, and only a matter of detail, to cast the cusps for several teeth for a bridge using a dummy of type metal to make the mold in the cuttlefish bone.—W. H. Mitchell, D. D. S., in Dental Cosmos.

UNUSUAL EFFECT OF COCAINE.—Although, possibly, of no scientific importance, the following case is not without interest. It was presented to the Societe de Chirurgie, and is reported in the *Medical Press:* M. Raymond presented a young girl, aged eighteen, who was found some time ago in a profound sleep in a railway wagon. The repeated efforts of the officials to awaken her proving unsuccessful, she was carried to the Salpetriere Hospital. Here, it was only at the end of the third day that she was awakened artificially. The sleep was calm, the respiration and the pulse normal; the eyelids were closed, the face pale, and the muscular relaxation complete; in a word, the sleep was absolutely natural. When she came to herself she gave the following interesting account of her antecedents. At the beginning of the present year she went to a dentist to have a tooth pulled, and as she feared greatly the pain of the operation, the dentist employed cocaine. But after the tooth was drawn she was seized with convulsions and finally fell into a deep sleep, and for three hours the dentist tried in vain to rouse her. Carried to the hospital, she awoke the following morning. For three months all was going on well, when one day she went to sleep in the train, and, carried again to the Lariboisiere Hospital, she did not awaken until the seventh day. A few days after she was seized with sleep in the street, and was for the third time received at the hospital, where she remained asleep ten days. This time she remained under treatment three months. M. Raymond, after passing in review the possible causes of this phenomenon, said that he had fixed his opinion on hysteria, and gave the history of several other cases from a similar cause.—Dental Record.

DENTISTRY IN THE PHILIPPINES.—Writing from Manila an American dentist, recently established there, says: "A Dental Board has been organized here in connection with the Board of Health, and I understand that a numher of the dentists now practicing will be required to pass an examination. At the present time this is not a good location. There are a large number of dentists here, and more are arriving by each boat. Several have given it up after a short trial, and either gone farther, or else have returned to the States. There are no accommodations here for a dentist. No gas, no electric light in day time, no gasoline. One must do his soldering by the use of a native oil, or with a very poor quality of alcohol." —Items of Interest.

Many persons tolerate more filth and disease in their mouths than they would on their feet! The mouth is the portal of life and health!—"Dominion Dental Journal."

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, MARCH, 1900. NO. 11.

Selections.

ARTICLE I.

DENTAL JURISPRUDENCE,

F. F. GRAVES, D. D. S., DENVER, COLO.

Read before the Colorado Dental Association.

When your honorable President called on me to prepare a paper for your consideration, "Dental Jurisprudence" at once suggested itself to me as a subject that had not been used at your annual meetings, and would probably interest you in a different manner and on a different line of thought from that which is usually employed at the dental conventions.

I shall abbreviate my subject considerably, but will try and touch a little on all the material points.

Dental jurisprudence is defined as that science which teaches the application of every branch of dental knowledge to the purposes of the law; therefore, to understand the subject thoroughly, one would have to possess a complete knowledge of dentistry in all branches, and to know the law sufficiently to intelligently recognize what its requirements may be in a certain case, and be able to state it to a court and jury.

The range of dental jurisprudence must of necessity be limited, but a dental jurist must possess knowledge thorough and complete within its scope.

A court and jury to arrive at a definite and proper conclusion in a case involving any or all branches of dentistry, must from necessity turn to some member of the dental profession to have these points made clear, and technical terms and phrases interpreted which are obscure in meaning to the unlearned or layman, but which can be made perfectly clear by an intelligent dentist in the capacity of an expert.

Now a dentist may be called to testify either as an expert or non-expert. As experts, dentists are classed with M. D.'s and other expert witnesses. An expert witness is any person who, owing to superior knowledge and experience, is qualified to give an opinion superior to the ordinary witness on that branch of science concerning which he is called to testify, and as such, cannot be asked but hypothetical questions, and therefore need not be conversant with the facts in the case at issue. The line between expert and non-expert is always clearly distinguishable. As a rule, non-experts are confined to mere statements of facts, while the expert is summoned to testify or interpret to the satisfaction of the jury, the accepted scientific or technical thoughts upon such questions with which they are unfamiliar.

Before a dentist would be allowed to give expert testimony, he would have to submit to a preliminary examination, or put upon his *voir dire*, which is for the purpose of determining as to his qualifications in that line of knowledge and skill.

He may be called upon to give testimony in all cases originating in the profession, either civil or criminal, to a piece of prosthesis or to malpractice. He may be subpœnaed by either the plaintiff or the defendant, and he is not responsible for the result of his opinions.

Identification by means of the teeth has been employed for a period of a century and a half past; as far back as the middle of the eighteenth century cases are on record where dead and unknown bodies have been positively identified by peculiarities of the teeth when all other means have failed. So, also, have murderers been brought to justice by these means; and so have innocent persons, accused of grave crimes, established their innocence, where peculiarities of the teeth are considered a reliable means of identification in the description of the alleged criminal. Thus where the identity of a corpse is suspected, especially as the hair, clothing, etc., are not sufficient, the dentist of the person whom the deceased is suspected to be, is summoned to examine the mouth of the corpse, and to testify whether the peculiarities of the teeth, etc., are similar to those of his former patient, and thus establish his identity. The dentist has many means of positive identification, such as the presence or absence of teeth, the presence of dentures, fillings, crowns, etc. In this manner, in the case of Timothy Monroe being identified as William Morgan, the murdered Freemason, in 1827. Many of you present have probably read or heard of this case, especially of the disappearance of Morgan, who had written a book exposing the secrets of the society of Freemasons. At any rate, Morgan disappeared, and many theories were advanced as to what had become of him. Finally a body was found that answered almost perfectly to the published description of Morgan. The testimony of Mrs. Morgan and others seemed to leave no doubt but that the body was that of Morgan; the gray beard, the bald head, much hair on the breast, long white hairs in the ears; also a mark of innoculation on the arm, teeth double all the way round, two of them being extracted on the same side of the face, the dentist having the same teeth which fitted exactly, the marks of a surgical operation on the large toe of the left foot, all seemed to be proof of a character sufficient to leave little doubt remaining, notwithstanding the clothes found on the body were different from any Morgan had ever worn. The verdict was that the body was that of William Morgan. Soon afterward a Canadian advertised for the body of Timothy Monroe, which caused the body to be exhumed, when, on the holding of a second inquest, it was discovered that the teeth were not double all around in front and that five teeth had been extracted from this body, while Morgan had lost but two. The second jury found the body to be that of Timothy Monroe.

Time and space will not admit of the citation of any more cases at length. The celebrated case of Tascott, the murderer of Snell, the Chicago millionaire, which filled the papers a few years ago, is another case in point. A man in Philadelphia was arrested for Tascott, and came very near being convicted, when it was discovered that the accused had not the gold fillings in the incisors that Tascott had, and the man's innocence was established primarily by his teeth, corroborated by some other proof. Now we leave the subject of experts and take up malpractice.

Before leaving the subject of experts, however, I want to repeat a little story I heard with reference to a medical expert, and which serves to illustrate that one must not be too technical with his terms in testifying in his case. The story runs, that on a trial for assault and battery, a surgeon in giving his evidence, informed the court that on examining the prosecutor he found him suffering from a severe contusion of the integuments under the left orbit, with great extravasation of blood and ecchymosis in the surrounding tissue, which was in a state of tumefaction; there was considerable abrasion of the cuticle. Judge. "You mean, I suppose, that the man had a black eye?" Witness. "Yes."

It would be easy to multiply examples of this kind. This is not science but pedantry, and serves only to disgust the counsel and judge and bewilder the jury. An expert should, when talking to the layman or unlearned in the profession, use as plain language as is consistent with the case at hand, and so, also, I think the dentist should, in his office.

Malpractice is divided into *negligent*, which embraces those cases where there is no criminal intent or purpose, but gross negligence in bestowing that attention which the case requires (as in a state of intoxication); *ignorant*, where operations and treatments are performed in a way calculated to do injury, and actually does harm, and which a properly educated and skilled dentist would know was not proper in the case, and *willful* malpractice, where a dentist performs operations or treatments with malicious intent to do injury.

Dentists, by holding themselves out to the world as such, engage that they possess the reasonable and ordinary qualifications of their profession, are bound to exercise reasonable and ordinary care, skill and diligence, but that is the extent of their liability. The burden of proof lies with the plaintiff in all actions for malpractice, to show that there was a want of due care, skill and diligence, and that the injury was for want of such skill, care and diligence.

The reasonable and ordinary care and skill which the law requires of dental surgeons is such as those in the same general line of practice and in the same general locality have and exercise in like cases.

Now, in reference to locality, a dentist in a small town or sparsely settled country would scarcely be expected to posses the same skill and knowledge as he who resides in a large city, and can take advantage of the many opportunities afforded him, and it would be unjust for a jury to render a verdict on that line, and the court would, in its instructions, emphasize the fact.

The science of dentistry is constantly changing and advancing. The discovery and introduction of new medicines for treatments and the inventions which are coming into use and being recommended by the majority of dentists who are up to date, as a natural sequence varies the standard of ordinary knowledge and skill; old methods of operating and treatment are being superseded by modern methods. When such changes of treatment and operating are generally known and adopted in a locality they become ordinary, and dental practitioners of such localities are responsible for a knowledge of these changes, and are expected to practice them There is no arbitrary rule that governs, however; for instance: There may be two or more remedies for treatment of the same case; there may be different instruments for performing the same operation; in such cases the dentist will have to rely on his own judgment, and where reasonable doubt exists he is not liable for adverse results, providing it can be shown that he did the best he could under the circumstances. A dentist must exercise good judgment in performing a new operation, or in the use of a new instrument, and see that no injury follows to the patient as a result of the experiment; for if injury should follow he can be held liable for damages in the same. To illustrate the point, I will, with your permission, cite a case on record of two surgeons who used a new instrument on a patient with a fractured limb, and an action was instituted for malpractice, and the gist of the ruling of the court is as follows: "That it appeared to the court that it was the first experiment with the new instrument; if it was it was a rash action, and he who acts rashly acts ignorantly, and though the defendants may be as skillful in their respective professions as any two gentlemen in the country, yet the court cannot refrain from saying that in this particular case they acted ignorantly and contrary to known rules and usages of surgeons." However, if a dental practitioner has a new method of operating or treatment which appears to him to be applicable to the case, and it is founded on good judgment, and furthermore, he could show to the satisfaction of the court and jury that it was an improvement over the old method in use, or that it was the only one available, he is privileged to use the same, and he would be exonerated if the injury could not be directly attributed to an unskilled or imprudent operation. The aim of the law is to arrive at a just and equitable judgment in the case, as based on the facts presented.

As has been stated, new operations and instruments are added day by day to the science of dentistry. Those that have been adopted and adjudged by the body of the profession necessary for the benefit and advancement of mankind, the dentist is expected to employ; at least, that is what the community and his patients expect of him, viz., that he gave the best services and the benefit of any new discovery in dental science. It has been a question among dentists at different times as to their legal right to give anæsthetics. There can be no question but that the dentist has the absolute right to administer any and all anæsthetics, providing that he complies with all the laws and enactments regulating the practice of dentistry in the state or county in which he resides. He is expected to render the patient the best service and treatment within the limits of his ability, and where in an operation he can mitigate or reduce the pain, he should do so, if the operation demands it, even to the administration of an anæsthetic. He however, must thoroughly understand all of the practical details of the operation which the court would hold to constitute ordinary skill. If he can prove that he is thoroughly familiar with the methods of administering anæsthetics, with all the precautions to be observed, he will not be held liable for adverse results if he applied his knowledge properly to the case.

It of course necessarily follows where life is in danger a greater degree of skill is required of the dentist, and what would be ordinary skill in one case would be adjudged *gross* negligence in the other. Here the legal interpretation of "ordinary skill" is held to include all knowledge and experience the profession has attained on the subject.

The standard of skill required may be illustrated in the following case recorded in an Eastern state: The defendants undertook to extract a tooth while the patient was anæsthetized with nitrous oxide gas; in extracting the tooth the forceps split, and part of the tooth lodged in the patient's throat, causing coughing and vomiting for four weeks. Under the circumstances, the court was of the opinion that the defendants were bound to use extraordinary care. They knew that the plaintiff, while under the influence of anæsthetics, had no control of his faculties; that he was powerless to act, and that he was unable to make the slighest effort to protect himself from any probable or possible consequences of the operation that might follow. He was in their charge and under their control to such an extent that they were bound to exercise the highest skill and diligence to avoid every possible danger, for the law implies duties on men according to the circumstances in which they are called to act.

Now as to a specialist. The law recognizes a difference existing between the relative skill and knowledge of a specialist and a non-specialist or general practitioner; in other words, a dentist holding himself out of the world as a specialist in any particular branch, whether mechanical or surgical, or in the administration of anæsthetics, is by law presumed to possess more than the ordinary skill and knowledge of the subject than the general practitioner. He is expected to use the highest skill and knowledge attained by the profession on the subject, and anything short of that would be condemned.

In cases where there is a reasonable doubt as to what treatment should be used, or what dental appliances may be applied, the dentist would not be held liable for adverse results, providing it could be shown that the error was honest and the dentist had used good judgment in the matter, and where uncertainties exist and the dental surgeon pursues a course that would meet the approval of the body of the profession, there need be no fear as to what would be the result before a court or jury.

We next take up the subject of negligence, and I hope you will pardon me if I touch on this in a very brief manner. A definition of negligence which would be recognized in law as negligence, consists of a want of that reasonable care which should be exercised by a person of ordinary prudence under all existing circumstances, in view of the probable danger of the injury, which would mean as applied to the dental profession, that the dentist is expected and should use reasonable care and judgment in all cases he undertakes, and it is held as a contract—an implied one—to do so, whenever he engages to serve a patient.

The courts have divided negligence into three degrees:

Gross negligence, which is the absence of slight care.

Ordinary negligence, which is the absence of ordinary care.

Slight negligence, which is the absence of great care.

There is no fixed and unswerving rule as to what constitutes care and diligence in every case. All the circumstances will have to be weighed and considered. The one aim the law has in these cases, as in fact in all cases, is to be reasonable, and as it is a question of fact for the judge to decide, it would depend on the evidence presented. In many cases the evidence would prove conclusively of carelessness, such, for instance, as extracting a sound tooth for a diseased one, which in all cases would be gross negligence.

I have said enough of negligence to give you an idea as to what the dentist's rights are, and also what the patient may expect, and will now speak of what would be the dentist's greatest defense in all cases mentioned above. In most all actions for malpractice, from whatever cause, contributory negligence is the principle defense, which means where the injury complained of follows in part from the negligence of the patient in following the instructions of the dentist. Say for instance, in the matter of keeping engagements for the treatment of alveolar abscess; if the patient did not follow the directions of the dentist in every particular, and evil results should follow, as a fistulous opening on the external cheek, which, as you know, produces an ugly scar, contributory negligence on the part of patient would be sufficient defense for the dentist, as it can be plainly seen that the burden of responsibility would be shifted from the dentist to the patient, and the dentist ceases to be held liable.

Where negligence is the ground of an action, it devolves upon the patient or plaintiff to trace the fault for his injury to the dentist, and for this purpose he must show the circumstances under which it occurred. If from these circumstances it appears the fault was mutual, or that the injury was the result of contributory negligence imputable to the patient, he has disproved his right to recover. There is a legal maxim that no person shall profit by his own wrong. Along this line the dentist will always have a great advantage over the prosecutor in all actions for malpractice, because it is rarely that patients absolutely follow the dentist's directions in protracted treatments and operations. In civil suits for damage arising from malpractice, the amount to be recovered is largely a question for the jury to decide.

The principle of compensation is the governing principle in the measurement of damages. The bodily pain resulting from the injury is always to be considered in estimating damages. It is a general principle that every defendent shall be held for all those consequences which might have been forseen and expected as a result of his conduct; but not for those which he could not have foreseen, and was therefore under no moral obligation to take into consideration.

I now in a brief manner will take up contracts. Time admits only of definitions.

A contract is an agreement between two or more persons upon sufficient consideration for the doing or not doing of some particular thing. Contract comprises in its full and liberal signification every description of agreement, obligation or legal tie, whereby a party binds himself or becomes bound, expressly or impliedly, to another to pay a sum of money or perform or omit to perform a certain act. Contracts are either express or implied; express, when formally stated or written; implied, when the inference can be drawn that certain things are to be performed from the actions of the parties thereto; contracts between dentist and patient are usually implied, and may be enforced the same as an expressed on. Under the implied contract, the dentist agrees to render his services with at least ordinary skill and suitable to the case about to be performed. The patient who accepts such service promises to pay a sufficient compensation to be named by the dentist. In this particular, I wish to say that the dentist's reputation and large practice would cut some figure in what would be considered sufficient reward as againt a dentist who assumes an obscure position in the profession. The presumption of law is that both dentist and patient will honestly perform the obligations incident to the contract, and the dentist cannot legally, after once undertaking the contract, withdraw without the consent of the patient; neither can the patient withdraw without the consent of the dentist. Fraud on the part of either party to the contract voids it, and if a dentist warrants his work in the whole or in part, the patient can insist on the guarantee being made good. A dentist may offer his assurances that the work is performed with his best skill and knowledge, but he must not guarantee the permanency of his work. And there is no reason why he should; it only furnishes a precedent or bad example, and educates the people to expect something more and lasting from dental work than that which the dentist can always deliver, and when the work fails he is discredited with that patient.

There is a subject I wish to touch on here, and one which is, I take it, a source of considerable annoyance to the dentist, and also one from which he suffers financially, and that is, broken engagements in the office. Every dentist present suffers more or less from this cause. He is apt to pass it over with a mental protest, thinking there is nothing to be done—no recourse—but to swallow his disappointment and look pleasant. Say he has an appointment at 10. About an hour or so after, and when it is nearly time for another patient to appear, the 10 o'clock one will float serenely in and offer as an apology some frivolous excuse, either ignorant of the inconvenience and loss of valuable time to the dentist or, if they do know, exhibiting a selfish disposition to consider no one's convenience but their own. I know from my own experience, whether from a tardy appearance, or whether they do not come at all, I have been rushed the whole day from what might have been accomplished in a leisurely manner and with greater satisfaction to both the patient and myself. Now the dentist has recourse, and that is, to be paid for lost time; and that is what he is morally and legally entitled to. The amount, of course, would be too trivial to invoke the law, but at the same time his cause would be a just one, and would be upheld by the courts. I state this just to show a dentist's legal position in the matter, providing the patient refuses to pay for time of a broken engagement. The law views the acceptance of an appointment by a patient for a specified time as an *implied contract*, thereby holding the patient responsible for such accepted time if the patient voluntarily violates the contract. The rule is reasonable, because the dentist relies on his professional time for his support. We ought to enforce this rule more. With united action in this matter, the public would soon become educated. The dentist has the same remedy at law as do parties in other lines under implied contract; where no price is stipulated he is entitled to recover a reasonable fee commensurate with the amount of time, skill, knowledge, etc., employed. In a general way, a minor cannot be held liable for services for which he contracts unless it can be shown that work was necessary, and was no more expensive than the case indicated, and then it would be void if the minor had a guardian or parent who had been in the habit of supplying his wants and making his contracts.

In this State, married women can buy, sell and make contracts and conduct any business on their own responsibility, and their husband's property would not be liable for their debt's, except in those cases where they contract a debt for necessities, and where it can be shown as such to the satisfaction of the jury, then the husband is responsible to the creditor for the liability. What are necessities in each case is for the jury to decide. The weight of opinions is that dental bills are necessities. In the matter of book accounts, to establish a bill in court in an action for money due, the books of the dentist are admissible as evidence, but what weight, depends on how methodical the entries are inserted, and if the whole journal and daybook seem to have the different items inserted properly, together with the dentist's affidavit as to the authenticity, will probably prove a claim.

There are other points I should like to have touched, but to open such subjects, and go into them as deep as I would like in order to make them clear would consume too much time, and to continue simply with definitions *ad infinitum* would be of little interest to you, and no satisfaction to myself. Gentlemen, I thank you.—*Dental Review.*

ARTICLE II.

ANOTHER LIFE ELIXIR.—FRENCH SCIENTIST'S ALLEGED DISCOVERY OF SECRET OF YOUTH.

The Paris correspondent of the Morning Post describes a remarkable discovery which has just been made at the Pasteur Institute.

He says that Professor Metchnikoff is engaged in seeking accurate doses of a series of lymphs, each of which will rejuvenate a particular organ of the human body. The Professor objects to premature publicity and insists that the correspondent only say that he had hope. The correspondent says:

"Professor Metchnikoff's experiments show that the explanations of senile atrophy has hitherto been erroneous. The theory was that certain blood cells devoured others and the vital functions began to weaken. The organic poisons thrown off energetically in youth were believed to remain in the system in old age, or at least to be less energetically ejected. These poisoned the finer cells, while without action on those of the conjunctive tissues. The noble cells died, became the prey of the other or plebian cells, thus bringing atrophy to the organ where the metamorphosis occurred. Professor Metchnikoff has proved conclusively that the noble cells are not dead in the organs atrophied by senility.

"Moreover, they may be multiplied. If assisted in their struggle with the plebian cells, they continue to live actively, as in youth, and, theoretically, the organism will cease to grow old and life will be prolonged. Professor Metchnikoff has found means of affording this resistence, and the results already obtained are extraordinary.

"The discovery was made in the following manner:

M. Bordet, one of the Professor's pupils in 1898, published the results of a curious experiment, which consisted of injecting the blood of a rabbit into a guinea pig. Later he injected the blood of this guinea pig in a rabbit and the latter died. Professor Metchnikoff sought the causes of the phenomenon, and was soon convinced that the blood of the guinea pig, injected into a rabbit or other vertebrate animal, elaborates the poison that weakens the red globules of the blood and makes them the prey of the phagocytes.

"Starting from the fact that the poison elaborated in the guinea pig is fatal in large doses, Professor Metchnikoff argued that the action in small doses must be stimulating. On this is based the action of all medicines, such as strychnine and arsenic.

"He therefore, began to inject into rabbits feeble solutions of previously injected guinea pig's blood. A cubic millimeter of the blood of the rabbits thus treated contained before the injections 3.000,000 red globules. In three or four days the number increased to 8,000,000.

"A sovereign remedy against anæmia has been discovered and the theory concerning the globules has been confirmed. An entire section of the Pasteur Institute is now working to find the specific serums for each particular organ. If the blood serum acts on the red globules of the liver the serum must have a similar effect on the cells of the liver, and this is likewise true of other organs. The experiments have demonstrated this.

"A specific kidney serum was found some days ago. The Professor is now determining the exact dose for medical purposes. The discovery has now passed the period of mere laboratory experiments. The celebrated Dr. Vidal is now at work on human serums."

The correspondent draws attention to the obvious result, the great prolongation of human life, if everything is successful.

Article III.

USEFUL HINTS FOR THE LABORATORY.

ARTHUR E. H. LISTER, LINCOLN, ENG.

It is not generally known how to obtain a good die from a lower model that has six or eight anterior teeth standing, and the jaw very much undercut below the necks of the teeth, lingually.

After the model has been prepared in the usual manner, oil or vaseline the parts adjoining the undercut, then flow plaster inside and build up the teeth as high as the plate is intended to go. While still plastic, stick in two pins at a suitable distance apart and press them down until they touch the model. When fully set, you can withdraw pins, and by gently tapping the model, the plaster will leave it clean.

Thoroughly dry plaster, then replace and stick it with a little wax to model; take an impression in sand in the usual way. Remove plaster from model, see that it is dry, carefully replace in sand impression, and either stick the pins through the holes "already made" into the sand, or hold it lightly in place with a knitting needle, or anything suitable, until you pour in the metal.

After a little experience with the above process you will be surprised to find that in nine cases out of ten you can procure a die on which to finish striking up a plate, which you could not have hoped to secure in any other conceivable way, to say nothing of the time saved.

When casting plaster impressions, instead of using oil or soap for the separating fluid, paint them over with a paint made of vermillion and oil, then you will be better able to detect the line of demarkation.

To clean the dirt and wax from teeth before trying them in, rub lightly with a soft rag moistened with methylated spirits.

If a vulcanite piece is to be packed upside down, you can economize time by inverting the impression for the duplicate in one-half of the flask, instead of in the usual way. Then when you wax the piece on to the model it is already flasked in one-half and there is no waiting for the plaster to set before you pour the counterpart.

To remove vulcanite from between the teeth, take a stiff, fine needle, mount it in a small handle or broach holder, sharpen it on two sides and you have a useful little tool for the work.

When using water of-ayr stone to erase scratches, it will greatly facilitate the removal if you occasionally dip it in a little pumice powder, which should be kept in a small vessel close at hand.

To remove scratches out of a very deep palate, if you have not a hub brush, round one end of a cork and fix it on lathe mandrel the same as you would a brush, using the usual polishing paste.

Nail a wine cork conveniently on bench and stud it all over with pins (it is surprising to see how many one will hold), then you will always have some handy for sticking in impressions of teeth, etc.

Paste a piece of sand paper within convenient reach underneath the bench, and you have a handy place to strike your matches.—*Items of Interest*

ARTICLE IV.

METHOD OF OBTAINING PERFECT METALLIC DIES FOR GOLD OR ALUMINUM SWAGED PLATES, RESTORING ALL UNDERCUTS AS ON PLASTER MODEL.

H. F. GRANTVEDT, D. D. S., AUSTIN, ILL.

In reading over an article in November Items of Interest, by Dr. Oliver P. Wolfe, of Canton, Mass., under heading "Zinc Dies," a method which I have used several times occurred to me, and though somewhat like Dr. Wolfe's method, it yet differs.

When I have a patient desiring a metal swaged plate, and the mouth presents deep undercuts and large heels (such as a plaster impression will not come away from intact) I proceed as follows:

Select an impression cup as good a fit as possible, build up the center of the cup in inverted V form with wax. Try in the mouth so as not to get it too high or it will not allow the cup to be pressed up firmly when filled with plaster. Then oil the cup and wax, mix plaster about medium and smooth, carry to the mouth and press up firmly, allowing a fulness of plaster between the alveolus, cheeks and lips, letting it harden as much as possible before removing. Remove the cup, leaving the plaster in the mouth, which should be quite thin if done correctly. Now cut slightly in plaster over cuspid region, and from right to left side on under side of plaster. The anterior portion should now come away intact. Then place thumb against side portions, and same can usually be removed in two pieces, separating in middle line corresponding to the wax previously built on cup, and which, if smooth, would still be attached to the cup and not to the plaster in the mouth.

Place the parts of impression in cup, using hard wax to hold them secure; apply coating of shellac and wait till perfectly hard; then coat with sandarach varnish and allow it to dry thoroughly. Pour model, and have it harden thoroughly before separating, say twelve to twenty-four hours; too hasty separating may result in a change of shape, as plaster is supposed to expand one-five-hundredth of its volume. When perfectly dry, shellac and sandarach, same as was done with impression.

Now you will have exactly the size of the mouth, as two coats of varnish on impression reduces model, while two coats of varnish on model will give exact size as though made in an unvarnished impression, but being very much smoother. Then dry hard.

Place on clean glass slab, surface up, with a sufficient matrix around it (about five or six inches in diameter). Mix together plaster, fiber asbestos and powdered pumice, common sand or marble dust, in about these proportions: Asbestos, three parts; plaster two parts; and pumice or sand, one part. Mix in a large plaster bowl, water first, one-half to two-thirds full, adding slowly alternately of each according to their proportions until nearly all the water is taken up and the surface of the mass presents a milk-like color and consistency with no bubbles. Now mix thoroughly and pour into matrix, tapping slightly to insure settling. Let it stand over night. Then remove from matrix and trim; also cut a slight groove or ditch around the model, and you can pry it out of the mould or matrix formed by the mass.

Place this mould, firmly wired, on gas stove to dry out. When dry, turn on gas full pressure and bring the mass to a red heat, into which pour your molten metal, zinc or babbitt, and gradually turn off the gas until metal begins to crystallize; finally, say about one-half hour after pouring, turn off gas entirely, allowing to stand on stove until perfectly cool, when the metallic die can be removed and the counter made by first smoking die, then filling in undercuts with moldine or core and proceeding as usual. For an accurate counter, make sectionally.

By the above method it is possible to spring the plaster model out of the matrix, which is held together by the asbestos fiber, and therefore no cracking. You will also get a much smoother and more accurate die than you ever can in sand for such a case.—*Items of Interest.*.

ARTICLE V.

ZINC DIES.

OLIVER PERRY WOLFE, D. M. D., CANTON, MASS.

I have a few words to say upon that branch of our profession which relates to the making of zinc dies on which to strike up a gold plate.

It seems to me that the various works on prosthetic dentistry deal to lightly with this particular subject, and as we all realize that the ultimate success or failure of a case depends almost entirely on the model upon which it is made, I think that a description of the method by which I make my dies might be interesting.

While in college we were taught to run the model in plaster, building it up an inch or so, and sandpaper the sides until they were smooth. Then chalk was applied and an impression taken in sand. We were told that the sand should be just wet enough, not too moist, and too dry. In fact it should have just the right "feel." Then we were told to pour it with zinc. If the model had undercuts which we could not overcome by drawing the model at an angle, we were to fill them in with chalk and cut them out in the zinc model while it was hot.

How many burned fingers, how many ruffled tempers and how many ill-fitting plates this has caused I could not attempt to state, but suffice to say that many dentists to day are putting vulcanite or celluloid in mouths, where gold could and should be used, and for what reason? They dread the undercuts.

Nearly a year ago a patient came to my office and requested me to make a gold plate. The mouth was in good condition and everything seemed favorable for a good-fitting denture. The impression was duly taken and handed to my assistant, with instruction to pour it and take an impression in sand. An hour later he came to me and said that he could not get a good impression, owing to the exceedingly deep undercuts.

I took the model and after several trials, the last time filling the undercuts with chalk, I succeeded in getting the model away without breaking the sand. But this was not satisfactory. All semblance to the original model was lost, and I knew that a great deal of cutting must be done on the zinc to bring it down to the proper shape. It then occurred to me to try an experiment, the details of which I am about to give.

NOVEL METHOD OF MAKING A ZINC DIE.

I covered the model with a thin coating of vaseline and set it on the slab, just as we do when about to pack the sand around it. Then I mixed sand and plaster in the following proportions: Sand, three parts; plaster, one part; just thin enough to run easily, and poured it over the model, tapping the slab to insure a perfect adaptation to all parts. As it began to set, I built it up to thickness of an inch above the face of the model, and then allowed it to set. I then put it over a low flame until perfectly dry. Then with a knife I cut a narrow groove from the center in front to the center behind, nearly down to the model. Then with one hand on each side I broke it apart, took out the model, and put the pieces together again, the fractures being so clean that when wired together the crack could not be detected.

This gave me a perfect impression, and we then proceeded to pour it with zinc. There was just enough plaster mixed with the sand to keep it firmly together, and as it was perfectly dry, I had no trouble with steam.

While my assistant poured the zinc, I gently tapped the impression and the slab on which it rested, exactly as we do when pouring a plaster model.

The result exceeded my expectations, for it gave a perfect die, entirely devoid of air bubbles or other imperfections.

The plaster and sand impression did not seem to suffer in the slightest, and might have been used again had we so desired.

The counter die of lead was made in the usual manner, and of course had to be pried off the zinc model.

The plate which I struck up on this die was the best that had ever left my office. Since then I have made several on this plan, and in each case have met with flattering success.

Should any of my brother practitioners try this method, or if they can suggest a better way, I should be pleased to hear from them.—*Items of Interest.*

ARTICLE VI.

A REMARKABLE REFLEX.

CHARLES B. KERN, M. D., LAFAYETTE, IND.

I was called at 1 a. m. to see a young man twenty-four years old, who, the message said, was dying. When I reached tho house, he was trying to lie on a couch, had a flushed face and congested eyes, perspiring profusely, unable to remain in any position for more than a minute at a time, short spasmodic attempts to breathe, and complaining solely of constricted pain over the heart, over which he kept his hand constantly. Could obtain no history of the case from him, but from family learned that he had been taken very suddenly, in the manner above described, about two hours before. He had toothache in lower left molar for about a week and had used camphor freely to put on gum, and more freely than usual just before attack came on..

Gave him aconite 3x every fifteen minutes, and within one hour he was resting quietly. Saw him the following two days, feeling quite well with exception of some toothache, but with no more chest pain. Was called again the second night and found him worse than the first time. I again gave him aconite 3x, which seemed to give a slight relief, but finally was compelled to give him an opiate, as it took two men to restrain him in bed.

I now knew that the trouble must come from his tooth, for when his tooth ached, he had no other pains, and when he had chest pain his tooth felt easy. The next day I took a dentist with me, who pulled the tooth, which was an unusual one, having exostosed roots, that had extended quite deeply into the bone. His recovery was rapid after the extraction.

I give this as an unusual case of reflex pain and with the hope that it may show that reflex pains are more frequent than we imagine.—*Medical Visitor.*

ARTICLE VII.

CLINICAL DEMONSTRATION OF DR. BONWILL'S METHODS OF PRACTICE.

REPORTED BY GEO. V. L. BROWN, B. A., D. D. S., M. D., C. M.

The following report of a clinical exhibition of patients, operations and methods, given by Dr. W. G. A. Bonwill, in his office in Philadelphia, June, 1897, before a committee appointed by the Section of Stomatology of the American Medical Association, the substance of which, though not properly within the limits of the purpose for which the section was organized, and therefore ineligible for publication in the columns of the official journal of the American Medical Association, is, nevertheless, so full of matter of such great importance to the dental profession that it is hoped its publication at this time, and in the manner contemplated, may lead to the preservation, with credit to their originator, of the methods described.

The committee were shown some forty patients. Work was thoroughly examined, and all were interrogated with regard to the length of time since the fillings had been inserted, the number of years they had been under Dr. Bonwill's care, and their opinions generally. These questions, as every one will know who remembers Dr. Bonwill's almost absolute deafness, could be frankly answered without fear of being overheard by Dr. Bonwill. There was, therefore, no possible reason why the most perfect truth should not have been told. Such a demonstration each of us felt it had never been his privilege to witness before and doubtless never would again.

One or two of the oldest had been under Dr. Bonwill's care for some forty odd years; many more than thirty years; others a shorter period, and some were very young patients. To one who had been accustomed to see Dr. Bonwill operating under the disadvantages of large public clinics, where everything possible constantly occurred to increase his natural nervousness, the beautiful work, with its careful polish and the exactness of everything in his private office was a revelation, when compared with the opinion too often expressed, that his work was rough and crude. Nothing could be further from the truth. Down to the smallest detail, all was neatness, exactness and perfection. The impression was a profound one, and doubtless many years of development will be required before we can fully comprehend the merit and value which underlay that which we only saw upon the surface.

As everyone knows, Dr. Bonwill bound his faith to Abbey's gold foil, claiming for it properties which other kinds did not possess, and his fillings, made as he told us, with this foil, would aggregate a large number, and if it were possible to roll them all together would make a sheet of gold marvelous when considered as having been put together, piece by piece, by one man.

The cavity outlines were quite marked by contrast to the square, more box-like forms advocated by many teachers at the present time. In his work every corner was rounded, every outline a perfect curve, but the boldness with which cavity walls had been cut away on the lingual and buccal margins, showed that many years ago he had anticipated, in its fullest extent, the value of extension for prevention. The contour of the filling in each case was bold and clearly marked, points of contact showing a careful consideration of most favorable adjustment.

The plus contours shown were quite astonishing (cantilever size, the author called them), many cases showing that, where teeth had been lost in early life, and crowding together had narrowed the space to some extent, but had caused a tipping forward, particularly of the molar teeth, endangering the future usefulness of the tooth through mal-occlusion, with a boldness characteristic of the man, he had not hesitated to extend his gold forward in a rounded, tapering form, something after the manner of the horn of a blacksmith's anvil until the point rested securely in contact with the distal surface of the tooth in front. Only those familiar with the peculiar properties of gold and the difficulty of perfect condensation of an overhanging mass in such form as to give secure resistance in all directions, can appreciate the triumph of the success this work meant. As for the value of supporting leaning teeth in that manner, and its import upon the future usefulness and long retention of the teeth, I think we have all of us yet much to learn before this can be fully appreciated.

The occlusal surfaces in many instances showed an attempt, at least, to reproduce angles and cusp lines rather than the smooth concavity with which we are, as a rule, familiar. The broadly over-lapping margins, both of gold and amalgam fillings, successfully carried out the design of clasping and supporting the frail walls of teeth rather than to depend solely upon support of the filling by the walls, and were a revelation to any one who had been led to believe that alloy fillings could not be relied upon for this purpose, by reason of insufficient edge strength.

The committee was not given, as fully as might have been, the nature and manner of working these alloys, too much of other things crowding out its minute consideration.

In many teeth gold and alloy were mixed in the same tooth. In almost every instance the color of the alloy had remained untarnished after the first evidently careful polishing, and each, of all these fillings, whether gold, or amalgam, or both, seemed to be doing service with perfect satisfaction. Amalgam seemed to last and protect against caries as well as gold, and vice versa, the lesson of it all being borne strongly in upon us that, beyond and above the details, which we all recognize as important in filling of teeth, there was a something in the work that this man did which rendered it capable of immunizing that particular portion of the mouth against the inroad of bacteria.

Many patients whose teeth showed that at some previous time there had been marked tendency to caries, reported having had almost no fillings placed in their teeth since the completion of the first general work, after coming under Dr. Bonwill's hands. The result certainly justified the means in every particular.

Pink gutta-percha fillings packed securely in proximo-occlusal cavities, extending across the interdental space to the next tooth, were to be seen in a number of mouths. These, Dr. Bonwill explained, were inserted for the purpose of effecting a slow but perfect separation. He left them about one year, after which, sufficient space was gained to admit of the perfect contouring of the fillings and the sensitive dentin lost much or all of its sensibility, so that the excavation for the gold or alloy fillings gave little or no pain, and there was slight danger of exposing pulps, a thing which seldom occurred in his practice.

Dr. Bonwill had great faith in gutta-percha as a stopping for children's teeth, and for use as just described. He claimed that the slow separation it effected allowed the adjustment of the tooth moved in its relation with the opposing one in the jaw and prevented the likelihood of future trouble from mal-occlusion, particularly in regard to pyorrhea alveolaris. Among all those cases none were found to have active symptoms of pyorrhœa, but several showed by the denuded surfaces of the roots and recessions of the gums, that they had been so affected, yet none were found to be noticeably loose, and there was an entire absence of discharge.

Very few crowns were seen, the extensive contour operations seeming to have reduced the necessity for their use to a minimum. Few artificial dentures were shown, such as were, being partial and having clasps for the natural teeth. The method of adjusting these clasps, as also Dr. Bonwill's now famous methods of articulation and arrangement of the teeth in the arch, according to his geometrical principles, are all fully set forth in his various writings, and need only mention here in that they seemed to be fully equal to the praise that their author himself has bestowed upon them.

His views on cataphoresis or the plain current of electricity are better set forth in the paper read before the Section of Stomatology of the American Medical Association, at its meeting held in Philadelphia in June, 1897, than would be possible in any report the committee could make, particularly since no demonstrations of this sort were shown, as it had been expected there would be; nor were any demonstrations given of rapid breathing as a means of performing painless operations by diversion of the will, but the writer can fully testify to the fact that nearly twenty years ago he heard Dr. Bonwill explain the use of this method in performing minor surgical operations, and its constant use during some few years past has absolutely demonstrated that an extremely valuable truth underlies this apparently simple experiment.

No fistulous openings were observed in any of the mouths; the gums and mucous membrane in all cases seemed to be in such healthful condition as would naturally be expected with those who observed the minute instructions given them.

In his own peculiar, very peculiar, way, one might say Dr. Bonwill seemed to possess, not only the absolute confidence of his patients but also their simple and almost blind obedience to all his wishes, they submitting, apparently as a matter of course, to his most arbitary exactions.

Some patients were shown for whom, in their earlier years, the method advocated by Dr. Bonwill, of cutting V-shaped spaces upon proximate surfaces of the anterior teeth, with little noticeable change upon the labial aspect, but quite sharply cut away upon the lingual side, in order to facilitate self cleaning with a view to the prevention of caries, had been practiced. So far as the result was concerned, he seemed to be highly successful in accomplishing that which he desired.

In Dr. Bonwill's own words, it was a lesson of forty-two years' work, and in answer to his question whether it showed the hand of art or mechanism, we would unreservedly say that in a high degree of art and mechanism paid silent tribute to the wenderful genius, through the instrumentality of which so much had been accomplished in the saving of human teeth, giving, as it did, one man the power to exert an influence upon human life far beyond the possibility of measurement by present standards.—*Dental Brief.*

ARTICLE VIII.

THE MOST REMARKABLE CLINIC IN THE HISTORY OF DENTISTRY.

REPORTED BY EUGENE S. TALBOT, M. D., D. D. S.

At the meeting of the American Medical Association, in Philadelphia in 1897, Dr. Bonwill read a paper before the Section on Stomatology upon the subject of "Cataphoresis; or, the Use of Electricity in Obtunding Sensitive Dentine." In closing the discusion Dr. Bonwill extended an invitation to a committee (appointed by the chairman) to visit his office at any time most convenient to them, to observe his method of producing anæsthesia by rapid breathing. The Chairman, Dr. R. R. Andrews, of Cambridge, Mass., appointed as a committee Drs. G. V. I. Brown, E. S. Talbot, M. H. Fletcher, A. W. Gillett and Geo. Eames. The committee met at the appointed hour, 9 o'clock, the following morning and, much to their surprise, found his spacious reception room filled with patients ranging in age from 14 to 78. These patients represented the extensive field of his practice. They were from Delaware, New York City and Philadelphia and had been summoned by telegraph and messengers. This illustrates the enthusiasm with which Bonwill entered into every undertaking. He had spent the entire night in this work. He had evidently enlarged, in his enthusiasm, the scope of investigation of the committee, since he proposed not only to illustrate his methods of practice at the present day in the younger patients, but also the results of his early practice in the elder.

Bonwill possessed perfect control of his patients. He would not operate for a patient who did not carry out his instructions to the letter. He frequently sent patients home and refused to operate, as they had not followed instructions given at a previous sitting. The cleanliness of all of his patients was remarkable. No inflamed gums or pus oozing from about the teeth was to be seen. The truth of his frequent statement "that he did not know what it was to have a case of 'pyorrhœa alveolaris' in his practice," was demonstrated by the mouths on exhibition. The committee had a very good opportunity, in the examination of the different patients, to see how he managed; the committee's questions to patients were answered in the presence of Bonwill without his knowledge, because of his deafness. The patients loved him, but said that they did not dare to visit his office for his services without complying with his instructions. Each patient was required to visit his office from four to six times a year and undergo a thorough inspection. If the brush was not being used in a proper manner or reaching certain localities they were instructed how to proceed. He gave his patients tooth brushes and tooth soap, so that there should not be the slightest excuse for unclean mouths. One of Bonwill's pet methods was the preparation of the teeth to secure getting wide spaces between them. The approximal cavities were partially prepared and red gutta-percha warmed and crowded in between the teeth; all approximal cavities were treated in this manner. The patient masticated upon this from six months to two or three years. By this method the teeth are wedged apart, making wide spaces, without inconvenience to the patient. The teeth were then contoured in such a manner that the occlusion was at the grinding edge, thus giving room for the alveolar process and firm foundation for the gum tissue.

Bonwill believed that the narrow alveolar process between the roots of the teeth failed to nourish the gum margin, thus causing interstitial gingivitis. Every operation upon the mouth was performed with the utmost skill, in a sense not understood by the average dentist. Bonwill was a master workman. His operations were perfection. The contour of the fillings, whether gold or amalgam, conformed to the movement of the jaws and the occluding teeth. Although Bonwill was an expert gold operator, many of his operations were done with amalgam, as he did not believe in crown and bridge work. In this he made another strong point as to the prevention of so-called pyorrhea alveolaris and unhealthy mouths. Crown and bridge work being a source of chronic irritation to the gum margin and the roots of two or more teeth supporting and doing the work of many more, and accumulating filth. Bonwill, in place of this, would build up the approximal surface and sometimes an entire crown (by introduction of screws), and polish the margin around and under the gum in such a manner that irritation or decomposed food and other irritants could not take place. Amalgam fillings were not confined to the posterior teeth. In many cases the anterior teeth were filled and contoured with amalgam. In the case of one old gentleman both approximal surfaces of all superior and interior incisors, as well as the bicuspids and molars, contoured with amalgam, had been doing good service for over thirty years. This case was of unusual interest, since osteomalacia (senile absorption of the alveolar process) had taken place, exposing the necks of all the teeth. The gums, however, were healthy, and no pus was present. The cavity margins at the approximal surfaces were smooth and free from decay; here was a fine opportunity to note the effect of wide approximal spaces.

In the place of bridge work, Bonwill had invented a removable plate (with which the profession is familiar.) This little plate was so nicely adjusted that it could be worn as a single tooth, or four or five could be attached when necessary. Fivs or six of these were exhibited, showing different methods of adjustment in favorable and unfavorable cases. Bonwill's method of adjusting artificial dentures and their practicable application was demonstrated in many mouths. He certainly knew how to arrange and adjust artificial teeth to the welfare of his patients. Patients were exhibited who had been wearing these dentures many years, some of which were very difficult to adjust. All were well pleased, as well they might be.

A few words about the reception room and office are necessary to complete. No one but Bonwill could arrange such an office. His æsthetic taste enabled him to furnish and fit up an office which resembled an art room more than a reception room to a dental office. The moment a patient entered the room he forgot the object of his visit. Art furniture, works of art about the room and upon the walls produced all the effects of suggestion (intentionally) upon his senses. Stand or sit anywhere, art books and bric-a-brac lay in profusion. These were so arranged that many could be handled at will. So interested would the patient become that time and dread were swallowed up and forgotten. One of the most singular features of Bonwill's life was that he was not a believer in evolution. He believed that the equilateral triangle was the basis upon which God constructed mankind, way back in the dark ages, and upon that basis he would remain until eternity. As a singular contradiction of this belief his patients could examine a series of about thirty photographs of Bonwill in a convenient corner of the reception room, demonstrating his evolution from childhood to the very year of his death. In these he took a natural but illogical pride, since they illustrate the helpless child developing year after year grasping new ideas as time passed by, adding nerve association to nerve association until he became a genius. He was emphatically a man who bettered the world by living in it.—*Dental Brief*.

ARTICLE IX.

VICARIOUS MENSTRUATION FROM THE GUMS.

W. GEORGE BEERS.

Since last January 1, 1900, I have had a very complicated case of contraction of the superior and inferior teeth to contend with, and during the frequent visits of the patient, aged seventeen, I had opportunity for observing one of the most interesting cases of vicarious menstruation which the limitations of dental practice has ever brought to me. The day after I had taken the impression for models, the patient came by appointment, and I noticed such an effusion of blood, about the gingival margins especially, and the gums generally, that at first I suspected that the blood in the mouth came from the lungs. But upon careful observation there was no mistake about the matter, and the surprise was the greater because the gums were healthy and the teeth free from caries or calculus. A week afterward I inserted the apparatus for expanding the superior arch. It was worn with comfort until the periodical return of the menses, when the margins of the gums—which the plate did not touch—were inflamed, as if by the rough inner edges of a badly-fitting vulcanite plate, and the bleeding reappeared. Upon examination of the apparatus there was no exciting mechanical cause to produce such a result, and I was at a loss for an explanation until I found that the blood was non-coagulable, and that the same symptoms of hysteria were present which I had observed the previous month. I then made it my duty to extend my inquiries, and learned that the condition was regularly present each month, associated with severe migraine, and that the bleeding began and ceased coincidently with the recurrence and cessation of menstruation. As I write, the ninth observation has been made.—*Dominion Dental Journal.*

Communicated.

THE WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

TO THE EDITOR:

It is well known to the members of the dental profession, especially those interested in dental education, that in April, 1899, the Wisconsin State Board of Dental Examiners refused to register diplomas from the Chicago Dental College and other schools, as the law provides. The provision of the law is that the board shall at all time issue a license to any regular graduate of any reputable, legally incorporated dental college, without examination, upon the payment of the registration fee. After making inquiry of the Secretary of the Board as to the reason why the diploma of his client was not registered, Attorney Quarles, who had been retained in the casé, received the following reply:

"MILWAUKEE, April 15. 1899.

HON. J. V. QUARLES, Milwaukee, Wis.,

DEAR SIR:—I am authorized to say from instructions received from a member of the committee on Colleges of the National Association of Dental Examiners that if the college you represent accepts all the rules as laid down by the National Association of Dental Examiners, in regular form through that body, that this Board will, upon the receipt of such knowledge, issue licenses to regular graduates of said College.

(Signed) W. H. CARSON, Sec'y."

After receiving the above letter, Dr. P. T. Diamond, a graduate of the Chicago College of Dental Surgery, brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the court in a vigorous decision handed down by Judge Sutherland, of the Superior Court of Milwaukee county, Wisconsin. Summing up the case, in regard to the standing of the college, the Judge makes use of the following language:

"The relation in this case shows that among intelligent men, whether members of the dental profession or not, the Chicago College of Dental Surgery must be regarded as a reputable institution. * * Therefore, without difficulty the Court reaches the conclusion that the motion to quash the mandamus proceedings must be denied."

The action of the board was based on the ground that those schools refused to subscribe to a rule passed by the National Association of Dental Examiners, regarding the preliminary educational qualification of students, the colleges giving as a reason, their unwillingness to accept the interference of the boards in a matter which was outside of their proper function.

The National Association of Dental Examiners, of which the Wisconsin Board was a member, at their meeting at Niagara Falls, in August, 1899, rescinded the rule which was the cause of the controversy, and passed a resolution adopting, in substance, the rule governing preliminary educational qualifications of students which was adopted in 1899 by the National Association of Dental Faculties, and it was hoped that henceforth the two national bodies would work in concert and harmony.

In adopting this resolution the National Association of Dental Examiners recommended to the various state boards that all the schools belonging to the National Association of Dental Faculties be placed on the recognized list, and that the graduates of those schools be licensed, and that all litigation cease. In all states where difficulties had arisen regarding the registration of diplomas of graduates of schools belonging to the National Association of Dental Faculties, the trouble was at once terminated and license issued, except in the State of Wisconsin.

The representative from the Wisconsin board pledged himself at Niagara Falls to return home and do all in his power to terminate the litigation. The week following the National Association meeting, the Wisconsin board, with their attorney, met by appointment the representatives of the Chicago College of Dental Surgery and the plantiff in the case against the board with his attorney, and after a conference the representatives of the board informed the representatives of the college that the members of the board had voted *unanimously* to continue the litigation.

On August 13, 1899, the following letter was written by Senator J. V. Quarles, attorney for the complainant to Dr. T. W. Brophy, Dean of the Chicago College of Dental Surgery:

"QUARLES, SPENCE & QUARLES,
Attorneys and Counsellors,
The Sentinel Bldg.,
MILWAUKEE, Wis., Aug. 13, 1899.

DR. T. W. BROPHY, 126 State St., Chicago, Ill.,

DEAR DOCTOR :—As you are aware, a meeting of the State Board of Dental Examiners took place yesterday in this city for the ostensible purpose of carrying out the recommendation of the National Board so explicitly made at its meeting at Niagara Falls. Nothing could be more plain and explicit than the recommendations of such National Association, which ought to be looked upon as a command by members thereof.

I have to report, however, that our State Board have assumed to be wiser than the national organization and have positively declined to follow or respect the mandate of the central body. The State Board refuses to recognize the diplomas of your college and all others similarly situated, and leaves no course open but to continue the litigation. We shall, therefore, unless ordered to the contrary, embrace the first opportunity to crowd the case to a final hearing and allow the National Board to deal with its recalcitrant members.

Very respectfully yours,

(Signed) QUARLES, SPENCE & QUARLES

Preparations were then made for a vigorous prosecution of the case. The Law Committee of the National Association of Dental Faculties, which was created at the Niagara Falls meeting, in August, 1899, for the purpose of taking charge of this litigation, as well as any other litigation involving the Association or any College holding membership therein, held a meeting in Chicago, October 14, 1899, and after Drs. Barrett and Morgan of the Committee held a conference with the members of the Wisconsin State Board, the latter agreed to license graduates of the Chicago Colleges and all schools belonging to the National Association of Dental Faculties. November 6th the agreement was consummated. November 7th the following letter was received by the Dean of the Chicago College of Dental Surgery :

QUARLES, SPENCE & QUARLES,
Attorneys and Counsellors,
The Sentinel Bldg.,

MILWAUKEE, Wis., Nov. 7th., 1899

DR. T. W. BROPHY, Chicago, Ill.,

DEAR DOCTOR: After great tribulation, regarding matters of detail, I am glad to report to you that the Board has finally decided to conform with the provisions of the dental law of Wisconsin, abide by the ruling of the National Association of Dental Examiners and license Chicago graduates and all other graduates from schools holding membership in the National Association of Dental Faculties, thus admitting that, in their action in refusing to license these graduates from April 11th to November 6th, 1899, they were in the wrong. Every thing, consequently, in the Diamond mandamus case has been brought to a satisfactory conclusion.

The injustice the Wisconsin State Board of Dental Examiners has done your graduates, yourself and the many schools involved, cannot be easily forgotten, but our success in securing all we contended for is an assurance of the justice of our cause.

Dr. Diamond's license has been issued on our assurance that he would discontinue the case. The stipulation to withdraw the suit has been signed by both parties, the whole matter is closed up and the litigation is a thing of the past.

Yours truly,
QUARLES, SPENCE & QUARLES.

A. O. HUNT,
W. C. BARRETT,
HENRY W. MORGAN,
Law Com. of the National Asso'n of Den. Faculties.

THE KENTUCKY STATE DENTAL ASSOCIATION.

On account of change of meeting of Confederate Association, and for the purpose of getting railroad rates, the date of the Kentucky State Dental Association is changed to May 29, 30, 31. We have some thirty papers promised for the meeting and nearly as many clinics and we will still add others to the list. Please be kind enough to announce this change of date and give us as much other notice as you deem wise. We have men on the programme from about twelve states. Don't fail to come and meet with us, and we promise you a fine time.

Yours fraternally,
F. I. GARDNER, D. D. S., Sec'y.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

In consequence of a contemplated new movement by the Association, with the probability of considerable benefit both to the State Boards and the more advanced colleges whose educational standards are high, the Secretary most earnestly requests from the officers and members of the several State Boards in the United States and territories, a new list of officers and members.

An early compliance with this request will be most heartily appreciated.

CHARLES A. MEERER, D. D. S., Sec'y,
29 Fulton St., Newark, N. J.

Obituary.

DR. B. H. CATCHING.

It is with great regret that we announce the death of our distinguished *confrere*, Dr. B. H. Catching, of Atlanta, Ga.

It was the writers pleasure to make his personal acquaintance while attending one of the meetings of the Southern Dental Association in Atlanta some twelve years ago, and whilst the distance that separated us prevented any close intimacy, the impression made then, and at several meetings since, leaves a picture of a man whose whole soul was devoted to the welfare of our profession.

On the night before his death he had attended a social entertainment, and arose at the usual hour on the following day, November 23rd, 1899, ate breakfast cheerfully with his family, and was about to start for his office when he was seized with apoplexy and died almost immediately. Whilst we all sincerely mourn the loss of so distinguished a brother, it is impossible not to wish that at the end we may all die as easily.

Dr. Benjamin Holliday Catching was fifty-one years old at the time of his death, having been born at Georgetown, Miss., January 29th, 1848. His great-grandfather was the Honorable Benjamin Catching, a distinguished man of his day, and one of the delegates at the convention which framed the State Constitution.

He studied dentistry first with Dr. J. S. Knapp, of New Orleans, La., and obtained his diploma from the Baltimore Dental College, graduating with honors in 1870, acting as valedictorian of his class. From 1871 to 1881 he practiced at Canton, Miss., removing at the latter date to the City of Atlanta, where he continued in practice until the time of his death.

He has been widely known in the profession from his contributions to literature, but more especially as the editor of the *Southern Dental Journal*, which he conducted for eight years. He resigned this position to carry into effect a cherished project, and began the publication of *Catching's Compendium of Practical Dentistry*. This was a volume published annually for five years, in which the author compiled from the current literature the most useful articles which had been published, classifying them appropriately so that the reader might quickly discover all that was most recent in connection with any given topic. Ill health, largely due to overwork in carrying on this publication, caused him to abandon the enterprise after the fifth volume in 1896, but in 1897 he again undertook literary work, and established *The American Dental Weekly*.

In this venture he had associated with five collaborating editors, and though the little magazine was well received and rapidly achieved popularity, it was abandoned at the end of one year.

The Doctor was once the president of the Southern Dental Association, was a member of the American Dental Association as well as of the more recent National Association. He was prominent in his State Society, and for years served as a member of the Georgia State Board of Dental Examiners.

He leaves a widow, son and three daughters.—*Items of Interest.*

Monthly Summary.

THE BRUNETTE PEOPLES OF EUROPE.—Sergi has given, in "Science Progress," the results of his study of the brunette races and their migrations to the Mediterranean belt. To his mind the origin of those races is a question of racial rather than linguistic migration. While admitting that Aryan speech among modern and historic peoples throws the burden of proof on any one who essays to find an origin other than Aryan for those peoples, Sergi makes bold to assume that the race or races with which Aryan speech originated may have been at all times few in numbers, and may further have been long since extinct; and consequently that all the Aryan-speaking races of historic times may have, at one time or another learned Aryan speech, without acquiring more than a slight tincture of Aryan blood. The ground is thus left open for an examination of the question from a point of view primarily anthropologic. and based in the first place on physical, viz., morphologic, criteria of natural kinship between the races to be examined. A survey of the whole Mediterranean shore line has led him to the conclusion that its earliest recognizable inhabitants and their descendants, who form the great mass of the present population, belong to a single closely connected group of races; that their earlier home is to be looked for in the former fertile interior of northern Africa, and not improbably in or near the upper valley of the Nile; and that the peninsulas of South Europa and Asia Minor have been peopled thence along several distinct routes which mainly follow the course of the pliocene land-bridges, or former land connections. The "Mediterranean race," thus described, has the following characteristics common to all its branches : The outer complexion is typically brown; brown skin, brown eyes, brown hair, abundant and always more or less wavy. It is thus equally distinct from the blonde white races which bound it on the north, and from the negro races of Africa. Modifications of the brown tint are found in all branches of the race, but are conceived to be due to intermixture either with the earlier aborigines or with subsequent intruders. The body is well-proportioned, the face oval, the nose rather narrow, the orbits wide and set horizontally, the forehead high and nearly vertic, the cheek-bones neither wide nor very high, the face not flattened, but if anything a little prominent in front; the neck long and well-rounded, and the features mobile and expressive. It is, in fact, the familiar brunette type which every one recognizes who has traveled to any extent along the Mediterranean. Determined by certain types of skull, the "Mediterranean race" appears, wherever it is found, as a collocation, more or less uniformly complete, of a number of such related types; and from this it is inferred that the race was already composite in the farthest area of origin to which it can be traced. This centre is placed by Sergi in the upper valley of the Nile, on the ground that here, among the Abyssinians, Gallas and Somalis, the characteristic collocations of types are most completely exhibited; the dusky complexion of a large proportion of these races at the present day being discounted, partly by their long-continued exposure to a more tropic climate than any other branch of the race, and partly by the certainty of continuous infusion of a negroid strain from the south.—"Popular Science News."

COLLEGE ATHLETICS.—A conspicuous feature of education in this country, one of its side lines, so to speak, is that of athletic games for the physical development and amusement of the students. Every college and school, of high and low degree, has its gymnasium for physical training and its athletic teams of trained men among the students, to play foot ball, base ball, and other games which require a high degree of skill and physical endurance. Even the girls' schools have their athletic games also nowadays. This brings to the front students of rare physical powers, and makes them the champions of their fellows in competitive games with other similar institutions, and thereby develops and fosters college pride. This is a commendable spirit, for pride in and admiration for their champions sinks personal selfishness and unites the students by a common bond of fraternity and good feeling. It stimulates an *esprit de corps*, as perhaps nothing else could do. The exuberance of animal spirits in the young makes them desire to engage in contests, in which physical strength and skill are put to the test. This spirit comes down to us from classic times, when games of strength and skill were so much cultivated and applauded. It is a wholesome spirit, and should be encouraged by all institutions of learning, where the young are congregated together.

College athletics also develop a pride in the institution with which the student is connected. He is drawn closer to his *alma mater*, and his ardent desire to see her sons victorious in contests with other institutions stirs his soul and creates a vigorous patriotism for her and her champions. His feelings and affections are aroused, and he becomes enthusiastic in his devotion to her interests in general as well as wishing to see her sons win in the contests in the athletic field. He rejoices when his college team is victorious, and is sorrowful when they are defeated, and even in after years it "warms the cockles of his heart" to hear that his successors at his *alma mater* are maintaining her prestige by winning victories on the gridiron or the diamond. It is a bond between him and his college that never grows old, nor fades.

To the individual student, the pursuit of athletic games and exercises is valuable, because of the development of a better physical organization and strength, and laying up stores of energy for the future. The English appreciate this better than we, when they encourage games and sports that develop vigorous physical organization in their boys. Wellington said that the battle of Waterloo was won upon the cricket fields of Eton by the traing that English boys received there. Military men insist upon the value of such games for young men who are to be soldiers, because of their effect in causing a better physical development and vigor. But the argument holds for the other walks of life as well, for in the fierce struggle for existence there is great need of physical strength and endurance, which these exercises will assist materially in developing and laying up stores of for the future, to fortify the body against the needs of even ordinary life.

This exercise also contributes to mental vigor and will tend to produce that most desirable combination, "a sound mind in a sound body." The student who plays well in the athletic field is apt to work well in the study. His brain is invigorated by his physical efforts, and his mental faculties are more active, which enables him to pursue and grasp difficult problems with greater ease. In addition to this, college athletics give birth to and cultivate that most wholesome of mental emotions—*Enthusiasm.* Enthusiasm is the tonic of the mind. An enthusiastic interest in something brings sunshine to the soul. It clears the mind, it warms the heart, it drives away despondency and blues, and especially for the student banishes the demon of homesickness, which is such a source of unhappiness to the average student. Such enthusiasm college athletics gives to boys, so this emotion should be encouraged, and besides it takes his thoughts from things that he might pursue for amusement—for the student must be amused—that would not only be useless, but might be harmful and pernicious, and will direct his thoughts into healthful channels.—A. H. Thompson, in *Stomatologist.*

UNDERCUT MODELS —A writer in the November Items of Interest, in an article entitled "Zinc Dies," asks for other methods of casting "undercut" models.

Prepare the model as for any case, always flaring the sides so that it will drop readily from the mould and shellac. Oil as far as the undercut extends, set upon a glass slab or other smooth surface; mix plaster and coarse, short fiber asbestos, equal parts, not too thin, and spread upon the undercut surface about one-quarter inch thick at the base, and half as thick at the top of the model; when hard, trim smooth, and trim the ends at a bevel so it can be easily replaced in the mould, dry thoroughly and mould; it and the model drop out readily, replace the core in the mould and cast the die. The process is simple and effective.

Oiled sand is of great advantage to the dentist who desires to expedite his work, as it is always ready for use, but cannot be used with zinc, as it is poured so hot it burns the oil, but there is no necessity for using zinc, as a proper babbitt metal is far preferable, being the only alloy that has all the requisite qualities for dental dies, and produces the most satisfactory results, as demonstrated by nearly fifty years use, after several years use of zinc.—*Items of Interest.*

IS THE ENAMEL A VITAL TISSUE?—Dr. R. R. Andrews, of Cambridge, with Drs. Williams, Black and others, claims that after the enamel is once formed there is no organic matter in it, and that it has no vitality. Dr. Andrews, in writing upon the subject, says:

"I believe that enamel, fully formed, is nothing more or less than a coat of mail, supplied by nature to protect the dentine, and subserve the processes of mastication, and I doubt if it be possible, in perfectly formed human enamel, to find so much as a trace of organic matter within the substance of the enamel itself, or at its surface. Near its junction with the dentine there are nearly always found slight prolongations of the organic tissue, from the dentine, within its substance, and those are numerous enough at this point to account for the one to three per cent. of organic matter found in enamel on analysis.

"The enamel is lifeless; there is absolutely no difference to be found by the microscope, in the appearance of the enamel of a live tooth, from that of a tooth that has been a long time dead."—International Dental Journal.

DEATH FROM CUTTING A WISDOM TOOTH.—M. Heydenreich reported the case of a man, thirty-three years of age, brought to his clinic and said to be suffering from mumps. There was high and persistent fever, rising to 104 degrees F., with agitation, delirium, stiffness of the jaws, and swelling over the right parotid extending into the neck. When M. Heydenreich saw the patient, on the third day of the grave symptoms, the condition seemed to have improved. The temperature was from 102.5 degrees to 100.4 degree, consciousness had returned, and the swelling was strictly limited to the angle of the jaw. The patient could open his mouth, and a drop of pus escaped by the jaw. All the teeth were there. It was certainly a case of suppurative osteitis of the inferior maxilla, due to the eruption of a wisdom tooth. There was not at this time any indication calling for operative measures. The next day, however, the patient became semi-prostrate, and in the evening the temperature rose to 104.9 degrees F.; on the fifth day he was taken in a moribund condition to the hospital.

There was complete left hemiplegia. A free incision was made by means of the thermal cautery as far as the zygoma, but no pus was found. He died next day at mid-day, the temperature being 98.9 degrees F. The autopsy disclosed pus on the right side between the cranial vault and the meninges up to the level of the convexity, towards the median region, and suppurative osteitis of the cranium. On opening the meninges a bed of very thick greenish-yellow pus (showing meningo-encephalitis) was laid bare. There was no lesion in the interior of the brain.—*New York Medical Journal.*

AMALGAM FILLINGS IN TEETH.—Mrs. W———, aged about thirty, tall, slender, dark hair and eyes, sallow complexion, generally unhealthy appearance; enlarged indurated submaxillary glands. Some years ago had had an enlarged tumor of some kind taken from right side of neck, back and below the ear; also suffering from indigestion, headache, neuralgia of face and jaws. All symptoms indicated mercury. She had many large amalgam fillings in the teeth and a red rubber plate. I assured her they were the cause of her trouble. After some months' treatment without decesive benefit, she consented to have them removed, and gold fillings and a black rubber plate replaced the former fillings. Then merc-viv., cm., one dose, and S. L. was given. Within three weeks the enlarged glands were visibly diminished, health and complexion much improved. Six weeks later enlargement of glands diminished by half, complexion and health good; the lady well pleased and glands still diminishing at last interview. Within three months' more treatment the enlargement of the glands will be entirely gone—William L. Morgan, M. D., Baltimore, M. D., in "Medical Visitor."

A THIEF steals your money behind your back. A dental quack swindles you before your face, and you do not discover it until too late. You can punish the former if you catch him. But the latter has a license to laugh at your folly.—"Dominion Dental Journal."

HOT WATER DRINKING.—There are four classes of persons who should not drink large quantities of hot water. These are as follows :

1. People who have irritability of the heart. Hot water will cause palpitation of the heart in such cases.

2. Persons with dilated stomachs.

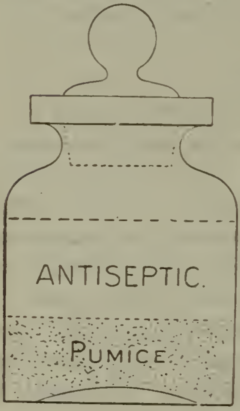
3. Persons afflicted with "sour stomach."

4. Persons who have soreness of the stomach, or pain induced by light pressure.

These rules are not for those who take hot water simply to relieve thirst better than cold water, and for that purpose is not to be condemned. But hot water is an excitant, and in cases in which irritation of the stomach exists, should be avoided.—"Indiana Lancet."

TO THE EDITOR OF AM. JOURNAL OF DENTAL SCIENCE.

Dear Sir.



I send this hint to my professional brethren, as one I have found most useful. Its object is to sterilize small dental instruments.

On thrusting the instrument into the bottle, it passes into the pumice. All matter that has a tendency to adhere is secured off by mechanical means. We have therefore two reasons for belief in safety. First the Antiseptic, and second that all injurious matter will be dislodged by the action of the powder. This simple device can be made by any dentist, for trifling cost of a bottle and the pumice which he may have already.

Often a mouth mirror seems to have passed its usefulness, dip some of the pumice from the bottle, and scour the glass with the finger. The result will be surprising.

Yours truly,

F. B. SPOONER, D. D. S.

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

VOL. XXXIII. BALTIMORE, APRIL, 1900. No. 12.

Selections.

ARTICLE I.

AN EVENING WITH BONWILL.

I. NORMAN BROOMELL, D. D. S.

"Good evening, young man. I have come to show you how to 'grind on' a set of teeth according to geometrical and anatomical laws."

Such were the words spoken by the subject of this sketch, as, passing his fingers through his gray locks, he placed his familiar grip at my feet. The time was an evening late in July of the past year, and the occasion one long anticipated and long to be remembered by me.

"Now, let us take off our coats and get to work, as I must be getting back home; I have many things to do before 2 a. m. Did I ever tell you that I do the biggest part of my brain work after the rest of you young fellows are in bed?"

"Are you using the articulator I gave you?" A nod in the affirmative was met by, "I don't believe you, or else you would have sent for the extra bows; I always keep them back to catch skeptical boys like you."

"What do you use such stuff as that for? Not for a base plate! Throw it away," putting his own command into violent execution; this supposed ideal product of the dental material makers was soon replaced, with the remark, "I prepare this kind myself."

"Now give me a fair-sized wheel. This is carborundum; why don't you use corundum? Here is an upper and a lower set of teeth; I will grind them on and I will leave you this other set to do yourself, and I will bet you can't do it. There is not a man in this city that can do it. Not even the professors who try to teach prosthetic dentistry.'

"Why do you always—?" "Hold on now, wait until I am through; I want to do the talking; you listen. Now you see I take these upper incisors and grind off the inner side of the cutting edge, making a bevel there of about forty-five degrees, and place them back again on the card. Now this is the first thing I always do in articulating a set of teeth. What are you laughing at? 'Articulation' is right, it is not 'occlusion.' Occlusion will do when referring to closing the lips or mouth, but it does not apply to the movements of the lower jaw through the action of the tempero-maxillary joint. If the action of the lower jaw were directly up and down, we might refer to the closing of the teeth as occlusion." "Wait a minute—" "Now what is it? Remember, I said no interruptions; but go ahead, speak up!" "You acknowledge that the movement of the lower jaw is not the same in all cases, and that it is seldom directly up and down." "Yes; well, what of it?" "I was wondering why it is, if the movements of the jaws are not always the same, that you grind the occlusal surfaces of the teeth alike in all instances." Almost before I had finished came the reply: "To compel them to be all alike, as the Almighty intended they should be. When you ask that question, it shows how little you know of the fundamental principles governing the teeth in man."

"Give me a pair of dividers. What! you haven't any? What would you think of a carpenter who would try to work without a saw? Well, dividers are just as essential in a dentis's hands. Did I ever show you how to square a circle? Ha, ha, ha! Well, I can come very near doing it, but never mind about that now. Don't sit down, stand up here; I want you to see how I grind these bicuspids. I have stood up to 'grind on' teeth for over forty years and I feel younger to-day possibly than you do."

After thus relieving himself of an opinion doubtless based upon his own physical convictions, he took from the card, one at a time, the bicuspid teeth belonging to the upper set, and with all the enthusiasm of the most ardent student, cut upon the occlusal surface of each, from mesial to distal, a well-defined, rounded groove, converting this surface into a double inclined plane extending from buccal to palatal.

"Now, do you see the way the bicuspids come together? They meet with all their surfaces touching." Then, while rotating the articulator from side to side, and looking in from the back, as in viewing the mouth from the pharynx, he added with enthusiasm: "Now, isn't it beautiful! And so perfect mathematically; after a preordained and established law; nothing could give a better idea of the wisdom of the Almighty. Now, the fact that I grind these teeth this way—you see I am doing the same thing with the molars—is not my creation, I am simply carrying out Nature's law as found in the human jaws, and having as its basis an equilateral triangle."

By the time my visitor had completed the grinding of the upper teeth, all of which, so far as the posterior teeth were concerned, were treated in a similar manner, he appeared completely wrapped up in what he was doing, and the energy of his toil was only surpassed by his desire to have me fully comprehend what he was doing and saying. At one time he looked up from his work long enough to ask if he was using too many "I's." After a glance, he appeared to realize that his remark was understood, and, referring to the incident which called it forth, he said: "That Western editor who had sufficient leisure to count the number of I's used by me in the publication of my personal experiences during my trip to Europe in 1889 taught me a lesson, but it was not one by which I could profit; the work which I have been doing in dentistry for nearly half a century has been in a special line, and of rather a unique character; I have not imitated or even referred to the works of others. All that I have done for dentistry has been after my own ideas of what was right; *theories* at first, facts soon afterward. Advice, although frequently proffered, was seldom accepted, this (pointing to his forehead) being my confidential and most reliable adviser. I was compelled to use the personal pronoun then, and shall continue to do so; when all your thoughts and actions are your own, it is impossible to do otherwise." After nervously consulting his time piece, he continued his work by taking the lower incisor, grinding from the labial cutting edge the round smooth surface common to finished porcelain. This grinding was so slight and performed so quickly, that it appeared to have no practical bearing on his theory.

"Now, the proper width for these lower incisors I get with the dividers after the plans laid down in this little chart" (here unfolding a sheet filled with many complex drawings); "by placing the dividers at this point I draw a line from A to B, and from C to D we get the radius of another arc intersecting with the line previously drawn from A to B; all within this equilateral triangle; now is that clear to you?" With a desire to avoid unhappiness, I had always made it a point to agree with Bonwill, so I answered in the affirmative. "Now with the proper manipulation of the dividers we get many equilateral triangles within the main triangle, each one of which denotes the exact size and location of one of the teeth in each jaw."

Venturing another question, I said: "You always take four inches as the size of the primary equilateral triangle?" "Yes." "And always go through the same geometrical figuring to obtain the position and width of each individual tooth?" "Yes." "And always grind the teeth in about the same manner before mounting them in the base plate?" "Yes; what of it?" "Do you not find that you get practically the same results in all cases? Do you fail to recognize a marked variation in the movements of the mandible, in some directly up and down, in others a more or less lateral motion?" After a hearty laugh, he said: "Of course I know it, to be sure I do; there are almost as many movements as there are jaws, but there is only one normal movement of the lower jaw, only one intended by the Creator—that is, the movements of all human jaws should be the same; why, how could we consider it any other way, when we see so beautiful and so mathematical a design employed by the Creator in the construction of the lower jaw? There is only one way by which the exact law governing the movement of the lower jaw can be carried out, and that is to articulate the teeth in such a manner that they will compel a perfect mechanical movement of the mandible, and in this way and in no other you will have perfect mastication."

"Now you see in grinding the lower bicuspids and molars I have intentionally refrained from cutting off from the lingual side. I do this because the teeth are always made with their lingual cusps too short; they should be made longer, and the only way to overcome this is by grinding from the buccal cusps alone."

Bonwill now proceeded to arrange the teeth more carefully in position on the base plate, placing one at a time and viewing it in every direction, his face taking on an expression of profound admiration as he said: "Now look at that; could you imagine anything nearer perfection? All that Nature wants is a chance to right herself, and with this beautiful arrangement of the articulation of the teeth we do a great deal to assist her in this direction.

This reminds me of the boy in my laboratory; did I ever tell you about him? It took him a long time to get on to the method of mounting teeth according to my rules, which are Nature's rules, notwithstanding he was apt and quick. One day I took a case from his hands and said, 'let me do that; you're getting it wrong.' When I returned them to him, he was quick to observe an intended imperfection which I had left. Taking them again, I corrected the defect and handed him the case. Instantly he said, 'that's it, that's it; why Doctor, if there is any such a thing as a God, He couldn't do better than that." While I was unable to see the force of this incident, Bonwill evidently thought it carried great weight, referring to it on numerous private occasions as well as in his occasional lectures to students.

By this time (11.30) I was so engrossed with Bonwill's whole souled desire to have me understand as he understood, to think as he thought, that I determined to get more out of him, not particularly in the line of the articulation of teeth, but in matters of general practice. In the meantime a little lunch had been provided in the dining room, and of this my visitor was invited to partake. His ready acceptance without even referring to the time of night encouraged me in the belief that he had more to say. After being seated, about the first thing he said was, "well, what do the boys think of me by this time? I wish I knew; well, I think I do know; but we will not talk about that now. Before it gets too late I want to show you how I pack amalgam." He had evidently anticipated this demonstration, for as he spoke the words he reached down and took from his grip all the requisites necessary to put his remark into execution. "Here is a lot of amalgam for you; I don't sell this, I give it away for what it costs to make it. I do this because I want everybody to use it, and I want everybody to use it because I know it will save teeth better than anything else. You fellows don't know how to use amalgam, that's the reason it fails, and then you think you can get more money for gold; ah! that's what most of you are after, the money, the money; it isn't the desire to save teeth. Now, with this I can do both; I can save teeth and I can get as much money for it as by using gold. Why do we impose a fee? Not for the material used, but for the service rendered, and that service means the saving of teeth."

Simultaneously with this talking Bonwill was "packing amalgam," as he termed it, using for a cavity a steel plate in which were drilled a number of holes of various sizes, these passing entirely through the plate. In mixing the alloy he used the palm of his hand for a mortar, and with the ball of his thumb for a pestle the mass was amalgamated with true Bonwill enthusiasm. The amalgam was then squeezed only moderately dry and dropped into the metal cavity in quite large pieces. Then came the most interesting part of the demonstration; grasping a plugger (one of his own design, of course, because Bonwill seldom made use of those planned or designed by others), he proceeded to force the alloy into the cavity. Force is the only expression to use in describing his methods.

The heavy handle of the plugger was taken by the hand of the operator—not by the finger and thumb, but by the entire hand; in this way bringing into action the wrist muscles, the plug receiving the combined force from the hand and wrist at each punch or push of the instrument. It might be added that the force above referred to was just as much a factor during operations in the mouth, and anyone who has had the privilege of seeing some of Bonwill's amalgam work can testify to the value of the methods which he employed.

"See, the cavity is now almost full, and I am bringing all the surplus mercury to the surface by pressure on this bibulous paper, which absorbs it. In the bottom of the filling there is no mercury and the metal is almost as hard at that point as it will ever be."

After turning over the metal plate, I found this to be the true condition; the filling was already so hard that no impression could be made upon it with the sharp point of an instrument.

"Now as I approach the surface I take up the surplus mercury by the addition of fresh alloy, rubbing it in with this round burnisher; rub it hard, then add more filling and rub again; keep this up until the surface of the filling is as hard as the bottom."

"Now it is finished, and I will show you what a perfect mass I have made," and taking an iron punch and a hammer, he proceeded to force the plug from the hole in the steel plate, which was accomplished only by a series of heavy blows. "There, it is almost as hard and compact as the steel plate itself." And so I found it; the entire operation, which had occupied but a few minutes, had resulted in the production of a metal plug which, in the mouth, would defy the force and strain of mastication. "Why, it's nearly one o'clock! I must get out. Wish I had time to tell you more about filling teeth with amalgam and the way I form a matrix for the purpose, by using a rubber-dam clamp and modeling composition or gutta-percha; also how I use Abbey's old-fashioned gold foil, and the use of paraffin in connection with oxyphosphate. But you're like everybody else, you don't want to listen. Good-night. I'll see you at Asbury Park."—*Dental Brief.*

ARTICLE II.

REPORT OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

THEODORE F. CHUPEIN.

The painless removal of the dental pulp, by means of powdered cocain, applied directly to that organ on an alcohol-soaked piece of spunk, charged with anesthetic, and subsequently pressed upon with a ball burnisher, over a piece of unvulcanized rubber, so extensively of late spoken of in the dental journals, was referred to by Dr. Chupein.

Dr, Wessels had tried this plan on several occasions, but in a somewhat different manner. Instead of using only alcohol, he made a menstruum of five parts of alcohol and one part of formaldehide. Into this he dipped his spunk and applied to the exposed nerves, bringing increased pressure on the unvulcanized rubber as much as the patient could stand without discomfort.

When asked why he used the formaldehide, he stated that this material toughened the nerve as well as caused it to shrink, and left it in a better condition for the barks of the nerve-extractor to engage themselves into it, thereby making its removal easier.

He had not, in this, been always successful, as he believed if the nerve was in a hypertrophied condition, it would refuse to be anesthetized.

On the subject of the employment of arsenical paste and nerve fiber for devitalization, Dr. Chupein spoke of the greater safety of the latter over the former, yet could not speak of its effectiveness. With nerve fiber, there was not that liability of oozing on to the gum and creating a sloughing, that there was with nerve paste. He used the nerve paste himself, and always cauterized the gum at the septum, with carbolic acid, for fear of sloughing, except when he applied the rubber dam, for such cases, with the view of greater safety.

Dr. Trueman was more disposed to favor the employment of nerve paste, as he then knew just how much he used. He thought nerve fiber was made by steeping cotton floss in "Fowler's solution of arsenic." He had used disks made of asbestos paper charged with arsenic, but had not found them as effective as the paste.

Dr. Cupein could account, in a measure, for the behavior of nerve fiber or asbestos disks not acting as promptly on the pulp, because this substance was not entirely arsenic, but the arsenate of potash. Fowler's solution is not arsenic pure and simple, but really a one per cent. solution of the arsenate of potash; hence, while containing sufficient arsenic to obtund sensitive dentine, as Dr. Register has demonstrated, it may not contain sufficient arsenic to devitalize the pulp. He thought the fiber might be used successfully in conjunction with the paste, instead of employing cotton with this. His mode was to apply the paste and cover this with a disk of lead or paper and on this apply cotton; by using nerve fiber next the paste, and cotton floss over the nerve fiber, he believed good results could be attained. He had been very successful by sealing the nerve paste in with phosphate cement.

Dr. Trueman brought forward the subject of inlays. He had found that it took about seven minutes to fuse the bodies furnished by the Dental Protective Company—in a Downie furnace. He was more disposed to favor high-fusing bodies than low. He had endeavored to make a furnace and use nickel as a muffle. Although nickel is nearly as resistant as platinum, this metal fused as soon as the high-fusing bodies; therefore could not be used as a muffle.

When grinding high and low fusing bodies, the former was cut by the grindstone very much as an artificial tooth, while the low fusing body cut somewhat as a dense sample of oxyphosphate filling material after it had set well. He thought that the low fusing bodies could be used in approximal or labial cavities, but that high fusing bodies were better suited to restore broken corners or on occlusal surfaces.

Dr. Bonsall was able with his Ash's electrical furnace to melt low fusing bodies in three-quarters of a minute.

Several of the members present spoke of the visit of an agent giving instruction for one dollar in the art of soldering aluminum. The solder was composed of six parts of aluminum, two parts of zinc and four parts of phosphor tin; the flux used was stearic acid. The agent demonstrated the soldering of a simple ferrule. The lapped edges were well cleaned and carefully fitted, and the solder made to flow by holding over the flame of an alcohol lamp or the absolutely blue flame of a Bunson burner. The solder is sluggish, but is pushed along the seam by means of a piece of iron wire in the form of a loop.

Dr. Chas. Chupein had made an aluminum crown, but found, when finishing this, that the solder had not flowed at all points as it had appeared to do.

Dr. Theodore Chupein had soldered a loop or attachment to an aluminum plate, such as is used when employing such plates in combination with rubber, but, although the loop held to the plate firmly, the solder had not flowed evenly.

The agent said that an entire set of teeth could be invested and soldered in this way, but, from the behavior and sluggishness of the solder, in the simple cases which he had tried, and the care he had used to have every part clean, he doubted if this could be done.—*Office and Laboratory*.

ARTICLE III.

NITROUS OXID WITH AIR OR WITH OXYGEN.

At a meeting of the New York State Medical Association held in New York, October 26th, 1899, Dr. Thomas L. Bennett, of New York, presented a paper on the administration of the above-named combinations. He stated that the inhalation of nitrous oxid was often followed by headache, dizziness, persistent nausea, or a tendency to yawn for twenty-four hours or more. He had been unable to find on record any disturbance of the heart, lungs, and kidneys, and from his own experience was sure that such results must be extremely rare. The prolonged administration of this agent was difficult, because the stages were exceedingly short and sharply marked. On the other hand, if considerable air was admitted, the patient would not pass quietly into deep narcosis, but would present marked signs of excitement. Hence it was necessary to admit air in small quantities. Deep narcosis was present after about one minute, and if all had been rigidly excluded, there would be also marked asphyxia. Mixtures of nitrous oxid with pure oxygen afforded an ideal combination; and they were best made in practice, by the use of Hewitt's apparatus. All changes in the proportion of gases must be made gradually, as sudden changes were apt to interfere with the smoothness of the narcosis. This method undoubtedly afforded the safest and best form of nitrous oxid anæsthesia, possessing all of its advantages and none of its disadvantages. It was practically impossible to move the patient after the anæsthesia had been started, without disturbing the narcosis In a long administration of the mixed gases it was not uncommon to consume five dollars' worth of the gases. The abdomen was apt to remain rigid even when the narcosis was deep, and hence this method was not ordinarily well suited to abdominal operations. The greatest indications for this anæsthesia were to be found: (1) in those in whom ether or chloroform could not be used without special danger; (2) in operations so short as to render the effects of ether or chloroform out of proportion to the results; (3) in patients who had previously suffered extremely from ether or chloroform, and had in consequence a great deal of them. This anæsthetic agent had been found especially serviceable in the following cases: tooth extractions, incisions of abscesses and sinuses or division of strictures, curettings of various kinds, stretching in orthopedic cases, breaking up adhesions in joints, removal of tonsils, doing major dressings, in the aged and in those presenting lesions of the heart or kidneys.

Dr. Golden said that he was positive that the degree of cyanosis depended almost entirely on the experience and skill of the administrator. The longest period that he had maintained narcosis with gas had been two hours, and with the mixture of gas and oxygen one hour and a half.

Dr. De Lancey Rochester said that in most general hospitals it would be difficult to find a sufficiently experienced administrator on the house staff, and in rural practice it was hard to secure the gases.—*Medical Record.*

ARTICLE IV.

FACIAL DEFORMITIES.

W. E. DAVIS, D. D. S., CAL.

The title of my paper "Facial Deformities" is, strictly speaking, too comprehensive, and was only adopted owing to the difficulty of obtaining a more sufficiently explicit one. Had it been my intention to thoroughly treat the subject of facial deformities in all various and multiform presentments, I would have attempted an Herculean task, which I am sadly afraid would have necessitated your spending many hours with me, in the end possibly feeling wiser, but undoubtedly sadder men. I therefore will, as far as practicable, speak of those deformities which attract us as dental specialists, leaving those forms that require no dental aid (or rather no aid from the dentist) to their own care. My endeavor will be this evening not much to give you an exhaustive treatise of facial deformities, but to try and impress on you the importance of the work we can accomplish with the plastic surgeon in face operations; and that with our specific help the surgeon can obtain results he is far from gaining now, although I must recognize the fact that, in some cases—but only to a slight extent—our help has been found of advantage by such men, who cannot fail to see the assistance we can give them. What we, as dentists, want to see is that our aid is procured much more generally than is new done, and not in isolated cases, as is at present the condition. At all such times it should be in the power of the dentist to suggest and carry out such treatment so as to leave very little doubt as to prognosis, and only a complete study of facial peculiarities can give us that knowledge which is necessary to the perfect performance of a difficult task, and one calling forth all the mechanical and inventive ability of the operator.

Facial deformities can, for the sake of facility, be classed under the headings of "Congenital" and "Acquired." The deformities coming under the head of the former are those of a hereditary nature, which, by the way, are most resistant to treatment. Further, we have cases where the action of the imagination of the mother upon the unborn child reacts upon it to such an extent that its whole natural contour may be sadly altered; and, again, there is the traumatic deformity, where the child, from the result of a blow, or the application of undue pressure before birth, may bring about a hideous deformity. With these two latter classifications we have little to deal, because the facial contour has been so altered by restricted growth or enlargement of osseous tissue that the most skilful surgeon would be unable to improve on nature's perversion. Those coming under the head of "Acquired" may be subdivided into—

(a) Those deformities resulting from a mechanical action, such as a blow, or

(b) May be the result of disease.

The great question which now arises from our study of the subject is: Are facial deformities on the increase amongst civilized nations? And I unhesitatingly answer:

Yes! (with a large note of exclamation), and there is no doubt in my mind when I give so decided an affirmative to the question. I expect, however, to be assailed for what I consider my emphatic handling. And how do I arrive at the conclusion? I can hear you ask, and what is my chief reason for so doing? It is based on the fact that the original pure type of nations has sadly retrograded, and that national cosmopolitanism is at the root of the evil. Where do we see a nation now-a-days preserving its national type? Nowhere, except a few of our uncivilized peoples. This alteration of specific characteristics is entirely due to the intermarriage of men and women of different nationalities. The mating of the German with the Italian, the Russian with the English, and so on, and nowhere do we see or can we study the peculiar results more so than in America, where emigrants from all nations, representing all types, met together on a common soft and mingled, forming a new nation made up of the multitudinous peculiarities of nearly every people under the sun. And what is the result of this wholesale destruction of the pure type of nations? It is the innocent cause of a large number of facial deformities, much larger than can be easily comprehended in the sunny land of Austria, but which in the United States has grown into a colossal evil; a class of deformity that can cause the possessor to fail to see the delights of society, and when in its most vindictive form, almost ostracises him from the congenial companionship of his fellows. These are the protrusion or retrusion of either jaw, so altering the human face divine that a baboon is a Nenus to it. While on this phase of our subject, I cannot help referring to the able article of Dr. Calvin S. Case, in the "American Text-Book of Operative Dentistry," edited by Dr. E. C. Kirk. It is entitled "The Development of Æsthetic Contours," and, in his opening words, says: In the developmental processes of animal life the teeth have probably been more influential than any of the other organs in shaping the bones of the head, especially in determining the physical characteristics of the physiognomy. The physical shape and structure of the jaws conclusively show the influence that the teeth have exerted in different species in response to nature's laws to propagate that which would best subserve them in the performance of their function. Often the position of the anterior teeth and alveolar process is such as to impress upon the contiguous features, even in respose, certain conditions which vary from a slight imperfection in asthetic contour to a most distressing deformity. The condition of protrusion is generally caused by persons developing the large teeth of one parent and the small jaw of the other, and the logical result is an overcrowding and extended enlargement of the arch, so that, if unattended, it is often most embarrassing. It is not my intention to go into detail regarding the causes of facial deformities from orthodontic complications, for their name is legion and would be a little beside the mark. My principal reason for speaking about these special kinds of deformities is that they may sometimes be lost sight of, and so increase the difficulties the dentist has already to overcome.

I want particularly to impress the fact that now that dental surgery is being recognized as a science, and we as scientific men, it should be our earnest desire, individually and collectively, to propagate the fact that, in a large number of plastic operations, our assistance as the exponents of—in this case—a mechanical art, can give material help to the surgeon, and that in restoring the face to its normal contour our knowledge of the mouth and its contiguous features would be to an enormous extent to improve that special class of operations at present so much in vogue.

It has been my experience, and I feel certain the experience of all my listeners, that some time or other a surgeon has thanked me for valuable assistance in helping him to obtain a result not possible to him without my aid. This is an old story oft told, but my excuse for dwelling upon it is, that it is of vital importance, it should be ever in our mind, so that an opportunity for promulgating its advantages to the surgeon, and in no small degree to the patient, should never be forgotten. A case in point will help to illustrate my meaning clearer. A young epileptic male, about twenty-five years of age, was brought into the Melbourne Hospital about twelve months ago. He had fallen some distance on to one side of his face. Some faw days after his admission I was sent for, and found that he had fractured the left superior maxilla, deep down in its extent from about the muscular attachment of the depressor ala nasi anteriorly across the canine fossa horizontally to about the region of the maxillary tuberosity posteriorly, and about along its palatal articulation with its fellow of the opposite side. The whole fractured portion was hanging almost loosely in the centre of the mouth. The decision of the surgeon attending was to remove the fractured portion of tissue, and so cause a hideous deformity. There was a great amount of swelling and discoloration, especially around the eye, which was quite closed from view, and I believe the principal reason for removing the fractured bone was from the fact that the patient suffered greatly from epilepsy, and the injury seemed to increase the trouble, so much so that no bandages would remain *in situ* long. I advised trying to restore the fracture and save the removal of any of it, and the case was left in my hands. The patient was chloroformed, and I got the fractured maxilla as much in position as was possible (the principal guide, i. e., the five anterior teeth, were missing), and on taking an impression made an interdental splint, which was attached whilst the patient was again under chloroform. The great difficulty was to keep it in place, for it did not matter how tightly a head bandage was adjusted, during his attacks the splint worked loose and came away. I overcame the difficulty by ligating the splint to the teeth and allowing it to be free from the lower jaw. This plan was entirely successful, and in about two months I removed the splint and found that union had occurred and the parts were quite restored. Externally the contour of the face was perfectly normal.

I could cite many more cases, but I think that "a word to the wise," etc., obtains in this instance. All these things go to show how important our profession can become to the laymen's eyes, and I think that if we steer on these lines, we will have a greater chance of compelling the public to recognize us as scientists, and specialists of a distinct branch of surgery, and of opening a greater vista for our own improvement and research.

Therefore, I say, let every dentist take unto himself the right to instruct his medical friends on this subject, and let those in power see that the rising generation of dentists receive special instruction in this important branch of our profession.

In conclusion, I will read a couple of extreme cases of facial deformities, taken from "Anomalies and Curiosities of Medicine," by Drs. Gould and Pyle," pages 585 and 586.

Injuries destroying great portion of the face and jaw, but not causing death, are seldom seen except on the battlefield; and it is to the military surgery that we must look for the most striking instances of this kind. Ribes mentions a man of thirty-three, who, in the Spanish campaign of 1811, received an injury which carried away the entire body of the lower jaw; half of each ramus, and also mangled in a great degree the neighboring soft parts. He was transported from the field of battle, and despite enormous hemorrhage and suppuration, in two months recovered. At the time of the report the wounded man presented no trade of the inferior maxillary bone, but by carrying the finger along the side of the pharynx in the direction of the superior dental arch, the coronoid apophyses could be recognized and about six lines nearer the temporal extremity the ramus could be discovered. The tongue was missing for about a third of its length, was thicker than natural, and retracted on the hyoid bone. The sublingual glands were adherent to under parts of the tongue, and were red and over-developed. The inferior parts of the cheek were cicatrized with the lateral and superior regions of the neck, with the base of the tongue and the hyoid bone. The tongue was free under and in front of the larynx. The patient used a gilded silver plate to fix the tongue so that deglutition could be carried on. He was not able to articulate sounds, but made himself understand through the intervention of this plate, which was fixed to a silver chin, and the chin he used to maintain the tongue plate, to diminish the deformity and to retain the saliva, which was constantly dribbling on the neck.

The same author quotes thc care of a man of fifty who, during the seige of Alexandria of 1801 was struck in the middle of the face obliquely by a cannon ball, from below upwards and from right to left. A part of the right malar bone, the two superior maxillary bones, the nasal bones, the cartilage, the vomer, the middle lemina of the ethmoid, the left maxillary bone, a portion of the left zygomatic arch, and a great part of inferior maxilla were carried away or comminuted, and all the soft parts correspondingly lacerated. Several hours afterwards this solder was counted among the dead, but Larrey, the surgeon-in-chief of the army with his typical vigilance and humanity, remarked that the patient gave signs of life, and that, despite the magnitude of his wound, he did not despair of his recovery. Those portions in which attrition was very great were removed, and the splinters of bone taken out showing an enormous wound. Three months were necessary for cicatrization, but it was not till the capitulation of Marabou, at which place he was wounded, that the patient returned to France. At this time he presented a hideous aspect. There were no signs of nose, nor cartilage separating the entrance of the nostrils, and the vault of the nasal fossa could be easily seen. There was a part of the posterior region of the right superior maxilla—the left was entirely gone—in fact, the man presented an enormous triangular opening in the center of the face. The tongue and larynx were severely involved and the sight in the left eye was lost. This patient continually wore a gilded silver mask, which covered his deformity and rendered articulation a little less difficult. The saliva continually dribbed from the mouth and from the inferior internal portion of his mask, compelling him to carry some substance to receive the dribbings.

Whympter mentions an analogous instance of a gunner who had his whole lower jaw torn away by a shell, but who recovered and used an ingenious contrivance in the shape of a silver mask for remedying the loss of the parts. Steiner mentions a wound from a cannon ball, which carried away the left half of the inferior maxilla, stripping the soft parts as high as the malar, and on the left side of the neck to within one and a-half inches of the clavicle, laying bare the transverse processes of the second and third vertebræ, and exposing the external carotid and most of its branches.

A peculiar case of facial deformity, which I think will be found interesting appeared in this same work, page 697.

A French invalid artillery soldier, from his injuries and a peculiar mask he used to hide them, was known as "*L'homme a la tete de cire*" The *Lancet* gives his history briefly as follows :—

During the Franco-Prussian war he was horribly wounded by the bursting of a Prussian shell. His whole face, including his two eyes were literally blown away. Some scanty remnants of the osseous muscular systems and the skull covered with hair were left. His wounds healed, giving him such a hideous and ghastly appearance that he was virtually ostracised from the sight of his fellows. For his relief a dentist by the name of Delalain constructed a mask, which included a false palate and a set of false teeth.

This apparatus was so perfect that the functions of respiration and mastication were almost completely restored to their former condition, and the man was able to speak distinctly and even play the flute. His sense of smell also returned. He wore two false eyes, simply to fill up the cavities of the orbits, for the parts representing the eyes were closed. The mask was so well adapted to what remained of the real face that it was considered by all one of the finest specimens of the prosthetic art that could be devised, This soldier, whose name was Mareau, was living and in perfect health at the time of the report, his bizarre face, without expression, and his sobriquet, as mentioned, making him an object of great curiosity. He wore the cross of honor, and nothing delighted him more than to talk about the war. To augment his meagre pension he sold a pamphlet containing in detail an account of his injuries and a description of the skilfully devised apparatus, by which his declining life was made endurable. —*Australian Journal of Dentistry.*

ARTICLE V.

THE DETAILS OF CONSTRUCTING A PORCELAIN BRIDGE.

G. W. SCHWARTZ, M. D., D. D. S., CHICAGO.

It is intended here to make clear many of the points in constructing a porcelain bridge that have given porcelain workers much concern, causing many to abandon the work.

It is conceded by all dentists that porcelain crown work has won its way to the front rank of prosthetic dentistry. With little argument against it when debated in dental societies, porcelain bridge work is still a bone of contention whenever the subject is introduced.

I will take for illustration a right superior bridge from the cuspid to the second molar, inclusive. We will suppose the roots are properly filled, and everything is ready to begin the preparation of the roots to be used as the abutments of the bridge.

I usually begin first by making a platinum cap for the second molar. I make a platinum cap for such a case because a long porcelain bridge is more likely to fracture than a short one. In this case it reduces the length of porcelain one-fifth, thus lessening the chances of fracture. If it were a four-tooth bridge from a cuspid to a first molar, the patient's first molar easily seen by the casual observer, I would make an all porcelain crown for the first molar, cutting the root even with the gum, making an abutement in just the same manner as I would for the cuspid root.

In preparing tho root for the metal cap I first cut down the tooth as near the gum line as desirable. I usually reduce the length of the crown of the tooth to about one-fourth its original length with enamel cleavers I trim the sides of the remaining tooth structure sufficiently parallel so that I can fit a band that will not destroy the interdental space, nor irritate the gum buccally nor lingually. The second molar now being prepared, I am ready for the measurements (to cut the metal) to make the band.

I prepare this abutment first because I may want to pare the cuspid at another sitting; for æsthetic reasons the patient might be annoyed at being without a cuspid longer than is absolutely necessary.

I usually take the measure of the root with fine binding wire. I always cut my hand longer at the occlusal than at the cervical because we must contour the band to get the flare at this part. By soldering the band in this way, we can trim down and get a perfect crown shape on this part of the band. When the band is properly festooned and fitted, the occlusal end should be filed and should be fitted perfectly square together and soldered with thirty per cent. platinum solder. If this is not done it is better to cut the band a trifle longer and make a lap joint. I plan the joint on the mesial part of the tooth, as it is afterward covered with the saddle.

Having the band fitted on, fill it with either modeling composition or plaster. Have the patient bite correctly, then remove the band and bite. Carve the cusps directly to this bite. Make die and counter die from an impression in moldine, strike up two cusps of platinum and solder them together with platinum solder. File them down until they are the proper length to be soldered to the band. They should be filed and honed until they are smooth and fit the band end to end, making a close joint. After they are soldered together we have a platinum cap that is twice as thick on the cusps as it is on the band, and if it is all made of twenty-eight gauge platinum, it is heavy enough to stand any strain put upon it. All that remains is to polish it. If properly constructed, it will occlude exactly when fitted on.

Next, the cuspid root should be cut off square to the gum line, and the labial surface beneath the free margin of the gum should be beveled. All other sides should be parallel. This is beveled labially because the facing can be ground to cover the band, and when completed will look as though it were a natural. cuspid coming out of the gum, thus avoiding detection. Before the enamel is trimmed off a measure should be taken and laid away until needed.

When the metal is cut for the band it should be cut a trifle short to make allowance for the bevel on the root. The band should be driven on and made to take the shape of this bevel. This can only be done by having the band the size of the smallest part of the beveled root. After I have my band fitted I file and hone it down until it is even with the root, then solder a piece of iridio-platinum on for the cap, all of which is twenty-nine standard gauge. Having enlarged the root canal for a good sized post, punch a hole in the cap with a plate punch and file square with a small square jeweler's file, until it is large enough to take the square post, which should be about sixteen gauge and of iridio-platinum. Next fit the two in proper position on the root, letting the post extend out of the cap half the length of the tooth. If the post has been tightly fitted, it will bring the cap along with it and can be easily soldered, but if it has been loosely fitted, it will need to be invested to be soldered.

The pin is left long because it will be needed to solder the bar and pins to later. The joint between the bar and the abutements must be well made or we cannot hope for any degree of success. This is where most of the failures occur in the metal work, the frame to sustain the porcelain.

Having the abutments finished, place them on the roots in the mouth. Take a wax bite; next a plaster impression with the abutements in place. If they do not come away in the impression, remove them and replace them properly in the impression. Fill these abutments nearly full with melted wax before running the cast in the impression. This is to facilitate their removal from the model when it will be required later in soldering the bar, saddle, etc. When I run the cast in the impression I always allow it to extend an inch or two at the heel, so that I may make a plaster articulator when I run my cast in the wax bite. By doing this we have the normal occlusion. I cannot use the crown or bridge articulator as satisfactorily as I can the articulator made in this way.

After your models are made in plaster, take an impression of the model with the abutements in place in moldine, run a fusible metal die and counter-die. This is to be used for swedging the saddle. which should be very narrow on the ridge; I should say ordinarily, a saddle one-sixteenth of an inch is wide enough. The saddle should extend well on the mesial surface of the molar cap and cover the bottom of the cuspid, passing each side of the square post.

I usually build on a little wax at each approximal space on the model before I take the impression in moldine to run my dies to swedge the saddle. This is one of the places where I have seen failures, and have tried to remedy it by relieving the pressure at this point, which is distal to the cuspid and mesial to the molar. I have had hypertrophied growths at these points, and believe they were caused by the pressure of the saddle on the gum. It was on this account I introduced a double bar bridge about two years ago, which many dentists have approved and are now using instead of the saddle bridge.

Having the saddle swedged ready to solder, carefully remove the abutments from the model and melt the wax out of them. Replace them on the model, take impression of them in place on the model in modeling composition. The cap and crown should come away easily in the impression. Run a soldering cast in this impression with the abutments in it, and solder the saddle in place on this cast. This should be done with twenty-five per cent. platinum solder. The saddle should be made of twenty-eight gauge platinum.

Having the saddle soldered and the abutments replaced on the original plaster model, grind in the facings to their proper position, waxing them in place. Varnish the buccal surface of the model with sandarach. Let it dry, and flow plaster over the buccal surface of the model and facings, including the adjoining plaster tooth on each side. Remove the wax from the pins and saddle, fit in an iridio-platinum bar under the pins and well against the facings. The part of the bar that comes in contact with the molar cap should be flattened out so that a broad surface will come in contact with its lingual portion. This is to get a good strong point, as this is the point where I have seen most of the failures in porcelain bridge work.

Sixteen to eighteen gauge is the size bar or wire to use. The metal work must not be too light, as it will bend if it is, nor too heavy, as the porcelain will be liable to break away in this case.

Having the bar properly fitted in place, tack it to the cap and post of the cuspid abutment and molar cap with sticky wax. Now remove the teeth from the model, having them in the plaster investment. Put them aside for the present. Remove the metal work from the model and invest it through the center with a soldering investment. Remove the sticky wax solder, solder each end of the abutment to place. Remove the investment and replace the metal work on the model. Grind the pins in the facings flat where they come in contact with the bar. This is to give contact surface for the solder. If a round wire is used for the bar, flatten it also at this point for contact of the pins. Replace the facings in the investment back on the model. Wax the facings in place with sticky wax again and cut away the plaster investment from the teeth. The teeth will occupy the same position they were set in at the beginning. Varnish the buccal surfaces of the facings with sandarach. This is to prevent the investment burning on the teeth. They will come out of the investment clean, if this is done. Invest them, remove the wax without boiling.

Before soldering the pins to the bar, a stay should be put in between the bar and saddle midway between the cuspid cap and the molar cap. A wedge should be put in each end, one at the distal of the cuspid, and one at the medial of the molar, just between the saddle and the bar. This should all be soldered with twenty or twenty-five per cent. platinum solder. This makes it sure that the teeth will not change position going through the furnace. This done, the metal work is completed. The case is ready to receive the porcelain.

To be able to bake a porcelain bridge, one must know the anatomy of the natural teeth and how to carve. This can be accomplished only by careful study and much practice. Not many instruments are required, but a knowledge of their use is essential. I use a small spatula and an instrument for tracing the cusps, a medium sized screw pin vice, a small keyhole saw, two artists' brushes, No. 3 and No. 0.

Put the post of the cuspid in the screw pin vice. This makes a convenient way of handling the piece without danger of dropping it or getting the carving out of shape in handling. Begin by building up the molar first, slightly exaggerating the size, making allowance for shrinkage, next the second bicuspid and so on until it is completed and ready for the furnace.

To get the porcelain properly baked, when carving, from time to time, the saw should be drawn across the pin while holding the case. This brings the moisture to the surface much quicker by tapping. The moisture can readily be absorbed by an old clean piece of linen or absorbent paper. The work should be jarred down as much as possible before baking as this reduces the shrinkage to the smallest degree and insures better porcelain. After the piece is carved, it may be put on the model and tried for articulation, which should be a trifle full and allowed to shrink in the furnace. After the first bake, the piece will look different from the form first fashioned, being full of cracks and much shrunken. These should be filled up with new body and baked again, which is usually sufficient if no gum enamel is used. If the gum enamel is to be used, this should be done at a third baking. —*Items of Interest.*

ARTICLE VI.

DISEASE OF THE MAXILLARY ANTRUM SUCCESSFULLY TREATED THROUGH A ROOT CANAL.

CUVIER R. MARSHALL, A. M., M. D., DETROIT, MICH.

As professional advisers we hear so much of other people's adversities that our own little personal trials and afflictions are apt to be thrust entirely into the background. Yet it must be confessed that we all—to use the common vernacular—"have troubles of our own."

I trust I may be pardoned for presuming to relate a personal experience. The only plausible excuse I have to offer is a charitable desire to report the result of a simple mode of treatment for a condition which is not at all uncommon, and which is usually considered to be amenable to surgical intervention only.

Some months ago I became aware that I had an exposed pulp in the left upper first molar. A gold filling that had been placed there several years before had fallen out and the exposed cavity enlarged by caries until the pulp chamber was laid open. I consulted a dental practitioner, a young man of reputed ability, who stated that it would be necessary to devitalize the pulp, after the removal of which he could fill the root canals and pulp chamber. Accordingly that was done, as I was led to understand, and nothing more was thought of the matter. A short time afterward, while working hard and exposed much to inclement weather in responding to professional calls, I was seized with a severe rhinitis which I believed at the time had been contracted in the usual way. Notwithstanding the fact that the attack was accompanied with an unusually prefuse muco-purulent discharge of a very offensive nature, the real cause of the condition did not occur to me. Relief could be obtained only by the vigorous and almost constant use of antiseptic nasal sprays, of which a mixture of normal salt solution with one per cent. carbolic acid gave me the most satisfaction.

This state of affairs persisted for several weeks with alternate improvement and recrudescence. There was no pain or localized tenderness, nor, in fact, any other symptom to indicate the source of the trouble. Finally I became convinced, intuitively rather than rationally, that the site of the disease was the maxillary antrum, and that the molar tooth which had been filled was the exciting cause of my trouble. I then consulted a surgeon who made a careful examination, and while he could detect no objective evidence of antral disease he thought it would be well to have the suspected tooth extracted. I was somewhat reluctant to lose a serviceable tooth, and decided, upon my own responsibility, to have the filling removed if possible, in the hope that more light might thereby be thrown upon the etiology of the disease. With that object alone in view, I called upon a young dentist of considerable skill and good judgment, Dr. John Roche, of Detroit, to whom I related the circumstances, and who at once consented to make an effort to remove the amalgam filling. The drill was applied and had scarcely gotten in motion when it suddenly plunged through a mere shell of amalgam, with which the crown of the tooth had been capped giving exit to a small quantity of foul smelling pus. Further examination revealed the fact that one canal was freely open and communicated with the antrum, into which a slender probe could be readily passed, while the two remaining canals contained live pulp. The latter were cleared of their contents and filled, and appropriate treatment was begun in the open canal.

To my intense gratification the discharge from the nostril immediately ceased, but it would as promptly return whenever medicated cotton or any other impediment to free drainage was placed in the canal; indeed, the prospect of saving the tooth seemed to be as remote as ever. Realizing that a long course of treatment would be required to accomplish a cure, involving frequent applications of antiseptic solution, I therefore determined, with the acquiescene of my dental adviser, to treat the trouble for a time myself. This I did faithfully, with a result so eminently satisfactory that I am encouraged to go somewhat into detail in my narrative for the benefit of any one who may wish to profit by my experience.

I found that I could readily pass the needle of an ordinary hypodermatic syringe well up through the root canal, and by that means was enabled to thoroughly wash out the antrum, for with dilute hydrogen dioxide and next with an antiseptic solution. Perfect drainage fortunately existed through the nasal foramen, by which route all detritus came away freely. In a few days I discovered that it was no longer possible to force fluids into the antrum, as the sinus had evidently closed. After that occurred the nasal discharge never again reappeared.

The next step was to check the formation of pus at the apex of the diseased root. To that end various antiseptic solutions were persistently employed for several weeks, but as often as applied the peroxide test would reveal the presence of pus. At that juncture samples of euthymol and enformol, two excellent antiseptic preparations from the laboratories of Parke, Davis & Co., were plaeed in my hands. Euformol is of about the same composition as euthymol with the addition of five per cent. of formaldehyde.

I at once began using the euthymol, diluted with three parts of sterile water, for injecting the root canal, keeping the pulp chamber constantly packed with cotton saturated with euformol. As the latter contains formaldehyde, a gaseous germicide of considerable power, I thought this volatile substance would perhaps penetrate further than fluids into the apical pus cavity, and, permeating the entire canal, would tend to keep it aseptic. These applications were continued for several weeks, until at last the action of euthymol and euformol proved to be positively germicidal and therefore curative, for all evidence of the presence of pus had disappeared under their use.

The canal was now filled by Dr. Roche with a mixture of iodoform and some excipient, the nature of which I do not recall, and the pulp chamber was packed with cement. As several months have since elapsed, I feel well satisfied with the result, for I have escaped what might have proved a very serious condition, and moreover I have now a useful tooth.—*Items of Interest.*

ARTICLE VII.

ARSENIC IN OXYPHOSPHATES NOT INJURIOUS.

DR. W. V. B. AMES, CHICAGO, ILL.

In view of the extent of the agitation of the question of the trace of arsenic often contained in cement powder, being a potent factor in the occasional unexplained death of a tooth pulp, I consider it advisable to endeavor to sift that matter down in replying to the questions propounded.

I do not think that it will be amiss to venture what may be information to some, that this trace of arsenic, in whatever form it may be, is derived from the original zinc ore, which almost invariably has an arsenical contamination. In the distillation of an arsenical zinc ore, the arsenic will be the first component to pass over into the condensing chambers, and if a manufacturer of dental cement happens to get his zinc or oxide from the early portions of a run, then his finished product will almost necessarily have a trace of some compound of arsenic, but if he happens to secure a quantity from the proper stage in the run, he has—generally unknown to himself—a product free from arsenic. In the results of the various series of tests of cement powders for arsenic, I am satisfied that it was a "fluke" in most cases in which a powder has been found to be arsenic free. In tests of powder of my manufacture, some specimens have been found arsenic free and some found to contain a trace, without any more care having been expended in the preparation in one case than the other. In the report recently published by Dr. J. E. Hinkins of tests of powders of different makes, one color of "Lynton" was found free of arsenic, while another contained a trace. I am in position to be pretty sure that this difference did not come from the pigmenting process.

The obtaining of arsenic free raw material is a discouraging undertaking, and if the usual process of producing chemically pure zinc oxide be adopted, the trace of alkaline precipitant which is so persistently present will be more objectionable than is the trace of the arsenic compound.

In a paper read before the National Dental Association August, 1899, I gave in detail experiments which proved conclusively to my mind that the arsenic present in cement powder is present as arsenic of zinc, and other experiments, which proved still more conclusively that arsenic of zinc, *per se*, cannot bring about the death of a tooth pulp. In the paper referred to I did not deny the possibility of arsenous oxide being developed under some unpardonable conditions. Some recent opinions, from recognized authorities, lead me to believe that I was too conservative in that paper, and that neither the type of phosphoric acid forming the active ingredient of cement liquid nor any putrefactive or fermentative change of organic tissue can develop a potent arsenic compound from arsenite of zinc.

It seems unfortunate that this question should have been brought out in such a way as to constitute a "scare-crow to young practitioners who have not had sufficient experience to enable them to arrive at an opinion of their own as to its importance. Since it must have come up sooner or later, if it can be thoroughly and effectually sifted at this time, all will be well, and some credit redound to some of those instrumental in setting up the "scare-crow."

A paper was read by Dr. A. B. Howatt, of Chicago, whose attention had been called to the evidence of arsenical contamination, but who had not had the experience to enable him to present the matter properly from a clinical standpoint. Then, in about the same way it was presented by Dr. J. F. Hinks, also of Chicago, who simply gave the results of some application of the March test, without giving the results of his clinical experience, which should have led him readily to the conclusion that the arsenic must be present in a compound wholly incapable of bringing about the death of a tooth pulp. Extra prominence has been given to the "scare crow by the manufacturer of a cement which happened to be one of those found by Dr. Hinks to give no arsenic reaction, in an advertisement, which reads: "Most cements on the market contain arsenic, 'Lithos' does not."

Dr. J. N. Crouse, the manufacturer, or, at least, the proprietor of Lithos, is qualified to estimate clinically, to a nicety, the potency of this arsenic compound. Now if Dr. Crouse has knowledge of some deleterious effect possible from the presence of an infinitesimal trace of arsenic as it exists, he owes to the world the enlightenment which would come from making public this knowledge. I will watch with interest the issues of the *Digest.* If he has no such knowledge, is such advertising for the good of all to whom it is addressed?

I believe, however, that this question must of necessity gravitate to logical conclusions as a result of its treatment by unprejudiced writers of large clinical experience, which ought to settle it for all time.

After what I have offered, it is almost needless for me to say that I do not believe that the statement of Vernon J. Hall in "Chemistry and Metallurgy Applied to Dentistry" in regard to cement powders containing *arsenious oxide*, can be substantiated.

But pulps do often die in a mysterious manner, it is said, under oxyphosphate. If it were from arsenic present in some form in the oxyphosphate, depth of cavity would make little difference, as all know who have made even moderate use of arsenious acid for devitalizing purposes.

If the arsenic feature be eliminated there are left, as I view, two possible factors, shock and irritation produced by the phosphoric acid.

When a tooth with a vital pulp has been denuded of its enamel, and a portion of its dentine has been cut away in preparing it for a cap crown, and pulp inflammation more or less acute ensues, the symptoms are not those of arsenical irritation, which will hurriedly cut off the circulation of blood within the pulp, but are akin to those symptoms caused at all times by shock of thermal changes, which, if sufficiently severe, will start pulp calcification, that very prevalent source of neuralgias. The death of the pulp of a tooth which has been denuded of its enamel can be accounted for without considering the possible effect which might be exerted by the phosphoric acid under some condition.

To get down to the question of whether the phosphoric acid may or may not act as a sufficient irritant to cause the death of a tooth pulp we must look into the chemistry of this acid. Theoretically and commerically it is supposed to exist in three forms, meta, pyro and ortho-phosphoric, which may be best regarded as consisting of phosphoric anhydride with one, two and three molecules of water respectively. Meta-phosphoric acid is capable of coagulating gelatin and egg albumen. The pyro and ortho-phosphoric are not coagulants of these materials.

A sample of acid may really be a combination of meta and pyro-phosphoric or pyro and ortho-phosphoric depending on the temperature to which the material had been subjected. Glacial phosphoric acid of commerce is meta-phosphoric acid in combination with meta-phosphate of sodium, added for its glacial consistency. A solution of this material in water subjected to moderate heat for a considerable time will give ortho-phosphoric acid and ortho-phosphate of sodium. A very large proportion of cement used is made up with a solution of this kind, and it is not reasonable to suppose that such a combination can be especially irritant if possessed of reasonable setting qualties. I can only see that there might possibly be danger of irritation from some very slow setting cement if placed quite near to a tooth pulp, for instance, much less than a millimeter removed. Some of the heavy liquids which give very slow setting probably border on being of the pyro-phosphoric type. One cement, the "Harvard," is labeled "Pyro-Meta-Phosphatische,,' etc. I feel called on to say simply that the nearer this liquid comes to being what its label implies the worse it is for the tooth pulp with which it is brought in close proximity. A pyro-phosphate solution would be a heavy liquid, giving slow setting and free acid decidedly in evidence. A pyro-meta-phosphate solution would have the same qualities in a more marked degree, and in addition would be a coagulant of albumen. I do not believe that the liquid of this cement is as bad as the label would indicate.

I am inclined to believe that, given a tooth with a cavity approaching very near to the pulp, the chances of saving that pulp in its vital state are much greater if a layer of some bland material such as gutta-percha or a resin in solution is placed over the region of near exposure, than if the oxyphosphate be used exclusively, especially if this be of a slow-setting variety with free acid plainly in evidence. Personally, I prefer oxychloride for covering all nearly exposed pulps, with generally in addition a film of gutta percha over the region most nearly exposed.

In conclusion I will say what I expect to find variously said in your discussion, that the death of pulps beneath oxyphosphate fillings and cappings are numerous with some practitioners, because very questionable conditions are so often covered up with this material. In my own practice with a free use of inlays, set with oxyphosphate, for ten years, in all sorts of cavities and a generous use of cement for filling in certain conditions for twenty years, there has been no suggestion or indication of oxyphosphate being a destroyer of vitality of tooth pulps. If my own experiments and those of others were not sufficient to give me a conviction, my clinical experience would justify me in continuing my free use of oxyphosphates. *Items of Interest.*

ARTICLE VIII.

OXYPHOSPHATE FILLINGS NOT INJURIOUS.

PROF. G. S. JUNKERMAN, CINCINNATI.

That pulps die under oxyphosphate cannot be denied. That some have died under oxyphosphate that would have survived some other kind of filling material is also not debatable; but I do not believe that in a perfectly typical case of a thin perfect stratum of dentine being covered with a perfectly mixed cement, death of the pulp will occur.

There are many circumstances that alter the effect of cement used in deep seated caries. Many times from imperfect diagnosis, due either to the carelessness of the operator, or often to our inability to determine whether there is or is not an actual exposure of the pulp, the results will prove satisfactory. If an imperceptible exposure exists, oxyphosphate will accomplish destruction of the pulp as readily as any other material placed upon it. Thus I do not believe that any pulp that is actually exposed can be preserved alive for any length of time under any kind of filling material.

I do not believe, however, that oxyphosphate should receive the censure that such results receive, where deep-seated caries has advanced to an actual exposure of the pulp, whether that exposure be perceptible or not. Many practitioners jump at conclusions exactly in cases of such a nature. If a perfect stratum of dentine exists between the pulp and all probability of actual exposure is removed, and if the cement is properly mixed, I do not believe that such a pulp will be injured. Take three typical cases in which a perfect stratum of dentine exists. Introduce in the first case the cement properly mixed, free from all superfluous acid. In the second case varnish with shellac the intervening stratum, as a precautionary measure, and introduce perfectly mixed cement. In the third case introduce cement that is not properly mixed, upon either a varnished or unvarnished surface, there being a surplus of acid present; the first two cases will be successful, the last will prove fatal as to the vitality of the pulp.

It is a surprising fact how few practitioners mix cement properly. Many pulps are destroyed by the use of this filling material when its use should have preserved them. I could give a whole hour's discourse on the subject of mixing cement. All cements have their peculiarities, and before any one of them is used, a perfect comprehension should be had of all its peculiarities. I have no doubt but that we would receive less criticism in the use of cement in the deep-seated cases of caries, if every operator had full knowledge of how to use cement and how to mix it. If we cannot use cement in deep-seated caries, then its chief function is gone as a non-irritant, non-conducting filling material. We must relegate it then strictly to the use of setting crowns and bridge work. But even in cases of this kind, its usefulness would be limited, because we would not feel justified in using it in many cases where crowns and bridges are set upon vital teeth. Cement does not fulfill all requirements, but we must believe that the percentage of complaints could be much reduced if it were properly used.

The question is asked, how do cement fillings destroy pulps ? I would answer this question by stating that, in my judgment, pulps are destroyed by the acid from the cement acting as an irritant to the pulp. We have no doubt established the fact that fluids permeate the dental tubuli, and that when there is a change in the chemical reaction there also occurs an osmosis outward or inward. The natural condition of the pulp is to be of an alkaline reaction. When you place fluid on the other side of the dental tubuli you produce an inward osmosis, and I feel thoroughly convinced that should the conditions of the pulp chamber be examined in a case where there has been a surplus of acid placed over the pulp, we would find phosphoric acid within the pulp chamber. The death of the pulp is accomplished no doubt from the effects of the phosphoric acid as an irritant, and the endeavors and struggles of the pulp to throw off this irritant, as would occur in any other part of the human body where an irritant were present.—*Items of Interest.*

ARTICLE IX.

EXAMINING BOARDS SHOULD BE CONTROLLED BY STATE SOCIETIES.

We publish elsewhere an account of a condition of affairs in connection with the California State Board of Dental Examiners, which suggests the question whether it is wise to clothe an examining board with unlimited power.

One of the first examining boards was that in the State of New York. This board was purely an examining board, being wholly without power to grant a license. It was indeed an integral part of the State Society, and upon their recommedation it was the State Society which granted diplomas to the successful candidates which gained them license to practice. Recently the dental act of New York has been altered, and the licensing power has been taken from the State Society, but the principle involved has been maintained. The Board of Examiners now report to the Board of Regents, who grant the license. This Board of Regents is a body of prominent citizens above the influences of political corruption. Being the guardians of the educational system of the State, it was deemed wise that they should control the dental schools as well.

It has long been a feature of the New York State system of government to entrust special departments of its police system to the care of associations organized with such intent. Thus we have "The Society for the Prevention of Cruelty to Children," "The Society for the Suppression of Vice," and others, all of which aim to compel obedience to the special laws within their province. In like manner the State Dental and Medical Societies not only examined candidates and granted licenses, but they likewise prosecuted illegal practitioners, the registration fees as well as the fines obtained in court being paid into the State Society's treasury. The reason for taking the licensing power away from the State

Dental Society has been given, but the examiners are still chosen by the State Society. It is thus evident that at no time have the examining boards of New York been free from the supervision of the State Dental Society, and their fine record is a strong argument against any system which allows politics to enter into the appointments, or which creates a board not controllable by the State Society.

We recently commented editorially upon the position taken by the New Jersey Board, which body declined even to make a report of its proceedings to the State Society. There was one exception among the members, Dr. Charles Meeker who claimed at that time that the best interests of the profession of his State demanded that the Dental Examiners should feel obliged to obey the wishes of the State Society.

The wisdom of his position is attested by the condition of affairs reported in California, and it is interesting to find Prof. Dunbar, in his summary of the California situation, declaring that the only remedy lies in an amendment to their law which will give the State Society control over the Board of Examiners. The charges against the California Board, the charges against the Illinois Board, the troubles with the Wisconsin Board, the declaration of independence by the New Jersey Board, all these added to the whispers against other boards, show only too clearly that the time has come for a wholesale rearrangement of the powers of dental examiners. The State laws should be amended as soon as possible, relegating the licensing power to the State Dental Societies, and restricting the duties of the Boards to examinations only.—ED "Items of Interest."

Monthly Summary.

MICROBES IN THE ARCTIC REGIONS.—Recent explorers in both the Arctic and Antarctic regions have brought back interesting information concerning bacterial life in the zones. It has long been known that travelers in the Arctic territory suffer very little from excessive changes of temperature, and are entirely free from colds and coughs which are so frequently observed in the winter in our own latitude. Nordenskiold is authority for the statement that Spitzbergen in the summer time is the healthiest portion of the earth. Levin made a number of cultures of the air in Spitzbergen and in King Charlesland. Samples of air were taken on the surface of the glacier, on the coast, on the top of a cliff, as well as on board ship. In each instance at least 1,800 liters (nearly 50 gallons) of air was filtered, indicating an elapsed time during the experiment of four or five hours. In only one instance were bacilli found. In that case the air was taken from the deck of the vessel while it was in harbor, and as only three colonies of bacteria developed, it is at least a question whether a grain of dust from the ship did not get into the gelatin. On the other hand, all samples of water, whether taken from the surface of the sea or at a great depth, or from a glacier or obtained by melting snow or ice, were found to contain bacteria, although in very small numbers. At the surface of the sea Levin found one germ for each 11 c.c. (3 drams) of water—a quantity of germ-life which is absolutely insignificant. The same amount of water taken from the River Seine has been found to contain more than two million bacteria. A curious fact was noticed in that the water taken from the ocean at great depth invariably contained more bacteria than water from the surface, and this in spite of the fact that deep water in the Arctic Ocean is usually below the freezing point. Levin made another series of experiments in order to determine the bacterial condition of the intestinal contents of various animals, white bears, seals, reindeer, eider ducks, penguins, gulls, frigate birds, sea-urchins, sea-anemones, shrimps; etc. These experiments showed him that in most of these animals the contents of the intestines are almost entirely sterile. In one white bear and in two seals was found a species of bacteria which resembled the bacillus coli commune. The inferior animals, sea-urchins, sea-anemones, etc., usually contained bacteria.

While scientists have long held that bacteria are not indispensable to digestion it is extremely interesting to receive this proof of their statement direct from the natural world. This fact and the fact of the existence of a whole world of bacterial life at a temperature sometimes 3½° F. below the freezing point are the most valuable results of Levin's researches, a full report of which will be found in the July number of the "Annales de l' Institut Pasteur."—"Dental Brief."

THE STERILIZATION OF WATER BY MEANS OF OZONE has now been in operation at Lille for some months, and a Commission, including Drs. Roux and Calmette, has recently issued a report on its efficiency. This ozone was produced electrically and was thoroughly mixed wlth the water, the amount present varying from 5 to 10 mgms. of ozone per litre of air. The amount of water treated was 35 cubic meters per hour. The conclusions of the commission are very favorable. The apparatus worked well and simple, and brought about a marked sterilization of the water. The untreated water contained over 2,000 organisms per cubic centimeter, after passing through the ozonier it cantained only two or three organisms (B. subtilis) per cubic centimeter.—"Pharmaceutical Journal."

A NEW ALLOY is being used in France in the construction of the bogies of automobile vehicles. It has been used by De Dion and Bouton, and has been given the name of Partinium. It is an alloy of aluminum with tungsten, and gives a metal with a specific gravity of 2.89 when cast and 3.09 when rolled. It is said to be stronger than aluminum, and almost as light, while at the same time it is less expensive.—"Dental Brief."

PLAIN TEETH WITH PINK RUBBER.—Objection is sometimes urged to the liability which the red or black vulcanite of which the plate is made, cropping through on the pink rubber gums and marring the effect. This would certainly be an objection if it could not be successfully combatted. The cropping through of red or black rubber on the pink gum facing may always be avoided, if the case be first carefully packed with pink rubber, especially between the teeth, as they lie in the plaster investment of the flask, using a thin instrument to pack the pink rubber (which should be softened on a heated soapstone slab) in these spaces. After the case is thus packed—packing the pink rubber of the gum facing first—the red or black rubber is packed afterwards; gates for the escape of the surplus rubber having been cut entirely the back of the investment, no gates whatever being cut on the front. The two parts of the flask are now put together and the bolts applied, and the flask immersed in water and permitted to boil at least five minutes. The flask is then lifted out of the boiling water, and the two front bolts screwed down first. When these are down as far as they will go, the flask is boiled again and the bolt screwed down. If a case of plain teeth with pink rubber gums be manipulated in this way the red or black rubber of the plate will never crop through to deface the gum facing.—T. F. Chupein, in Office and Laboratory.

THE USEFUL LEMON.—The relations of fruit to digestion are particularly interesting. Fruit juices are disinfectants. They are germicidal. The juice of the lemon is as deadly to cholera germs as corrosive sublimate, or sulphur fumes, or any other disinfectant. It is so powerful a germicide that if the juice of one lemon be squeezed into a glass of water that is then left standing ten or fifteen minutes, the water will be disinfected; it makes little difference where the water has been obtained, or whether it has been boiled or filtered. This is a fact worth knowing, for any one of us may find himself under circumstances in which it is impossible to get either boiled or filtered water. In such a case, the juice of a lemon will purify the water perfectly.—Good Health.

SENSITIVE DENTINE.—Sensitive dentine is not so difficult of control as some suppose. A little paste of oil of cloves, creosote and tannin on cotton, with a few finely crushed crystals of cocaine on the surface of the paste is good. Let it remain in the cavity two or three days covered with cotton moistened with sandarach varnish.

For immediate and temporary effect let the patient press on the tooth a little oil cloth or rubber bag filled with pulverized ice—first slightly, and gradually more closely until the tooth is benumed.

But for obstinate, deep-seated, sensitive decay, and for a permanent cure, where the pulp is not exposed or nearly so, there is perhaps nothing better than a few fine scrapings of nitrate of silver, substituted for the cocaine in the above treatment. It will not only remove the sensitiveness, but will permanently harden the dentine; so as to prevent further decay. I have in this way removed sensitiveness of superficial decay on the surface and neck of teeth and afterward found the affected part so hard as to need but little further treatment, and no filling.—Dental Brief.

DENTISTRY IN FRANCE.—This sign—"Dr. Sylvester, American Dentist"—at the entrance to his office in a French city resulted in the condemnation of the dentist on two indictments: 1, for practicing under a pseudonym, as his name was in reality Sylvester Baumgartner; and 2, for neglecting to append the source of his medical diploma, the court asserting that dentistry being a branch of medicine the derivation of the title of "Dr." must be stated on the sign to conform to the French law in respect to aliens practicing in France.—"Dental Brief."

CHLOROFORM IN INDIA.—It has been found that an apparatus for killing animals with chloroform in England would not work in India, because the high temperature prevented the concentration of the chloroform vapor. That this was the case was proved by the fact that by placing ice in the box the animals were readily killed.—"Dental Brief."

'DENTISTRY" VS. "MECHANICAL DENTISTRY."—Whether it is done intentionally or not, there are licentiates who seem determined to drag down prosthetic dentistry to the level of a trade. Trade methods, and the catch-penny advertisements of the traders, are introduced into the press, and by vulgar showcases, just as we are accustomed to seeing with the display of boots and shoes, the trade ideas are emphasized. The veterinary surgeon needs the environment of the stable. Some of them go so far as to advertise themselves as blacksmiths in addition. These are legitimate and honorable, but veterinary surgery, *per se*, is a scientific profession, which any educated gentleman might be ambitious to practice. It may come to pass that mechanical dentistry will be assigned the same relationship that the forge occupies to some of the Vets. There will always be those, however, who will then have only a collateral interest in prosthetic dentistry proper, and as the oculist sends his "prescription" to the optician, and the surgeon his legless and armless patients to the manufacturer of artificial limbs, so the distinctively "surgeon" dentist may yet relegate his prosthetic cases to the exclusive mechanic. Long ago we foreshadowed this, and it looks now as if it were one of the changes sure to come in the course of time.—"Dominion Dental Journal."

A YOUNG licentiate of Quebec had practiced for one year in a small village of considerable wealth, yet of rather narrow intelligence regarding the value of conservative dentistry, Fully three-fourths of his patients believe that the fakir who perambulated the country, crying up his cheap artificial sets of teeth, and crying down all efforts to save the natural teeth, was a missionary of mighty peace and enduring comfort. Not a day passed that the conservative practitioner did not meet this class, and business left him because he would not extract teeth wholesale. At the end of the year he decided to leave the unsavory pastures and find a better field. One of the resident clergymen came to see me. "I'm told, doctor, that you are going to leave us? May I ask the reason?" "Yes," replied the dentist. For the first six months

I told the truth, the whole truth, and nothing but the truth, to my patients, and I nearly starved. For the last six months I have told them anything but the truth. I've trebled my income, but I'm nearly choked. The dentist who can make lying a profession is the sort of a man to succeed here." And he left.—*Dominion Dental Journal.*

Skulls and Brain Capacity.—Professor Arthur Thompson, in the October number of "Knowledge", deals with the form of skulls and brain capacity. The average weight of a man's brain is about fifty ounces; that of a woman about forty-five ounces. This difference between the sexes is less marked in savage than in civilized races, and is apparently explained by the fact that in the higher races more attention is paid to the education of the male than the female, and consequently the brain is stimulated to increased growth.—"Dental Brief."

Repairing Rubber Plates.—Allow me a little space to describe a simple method of repairing rubber plates. With wax fasten the fractured pieces together and insert the palatal surface in plaster. Cut a narrow section through the fracture and burrow the adjoining surfaces one-eighth inch deep and one-quarter inch wide. No holes, dovetails, nor grooves are needed, but simply pack the fresh rubber with a hot spatula and flask.—L. P. Haskell in "Dental Brief."

Real diamonds cost more than paste diamonds. You must pay more for silk than for cotton. The jeweler who says he gives you real diamonds at the cost of paste, the dry goods merchant who says he gives you silk at the price of cotton, are just like the dentist who says he will give you the best sets of teeth at the price of the poorest.—"Dominion Dental Journal."

STERILIZING DENTAL INSTRUMENTS.—While boiling, even when disinfectants are used, cannot be relied on for destroying all forms of germ life, on the other hand, it has been conclusively demonstrated that steam without the use of disinfectants will most effectively destroy organisms which cause infectious disease. For steaming dental instruments and napkins, thereby more thoroughly sterilizing than by simply boiling them, the ordinary dental vulcanizer furnishes a simple and effective sterilizer.

Place the instruments in cotton or linen bag tied closely at the top, put in the vulcanizer, and run the thermometer up to 230°. Shut off the gas, and allow the instruments to remain in the steam bath for ten minutes. A small quantity of bicarbonate of soda placed in the water will prevent the instruments from rusting. Any vulcanizer holding three flasks will admit the forceps, which of all dental instruments should be thoroughly sterilized.—Kasson C. Gibson, in *Cosmos*.

ANCHYLOSIS OF THE JAW DUE TO INTERSTITIAL MYOSITIS.—Seggel (*Duetsch. Zeit. f. Chir.*, May, 1899) describes a case of anchylosis of the jaw of rather unusual character. The patient was a woman aged forty-eight years, who lost all of the molar teeth on the left slde on account of caries. They were pulled out in a rough manner and marked inflammation followed each extraction. Three years after their removal the patient was exposed to a severe wetting and was thoroughly chilled. The left side of the face swelled badly, and this swelling and pain lasted for more than three months. From that time on the cheek never regained its normal size, but grew gradually larger without pain until it was impossible to open the jaw. A diagnosis of sarcoma of the ascending portion of the jaw was made, and an extensive resection or the bone and soft parts, including the whole of the parotid gland, was carried out. Complete facial paralysis of that side resulted. The wound healed well, and in six weeks the patient could open her mouth nearly an inch. The tendency of the jaw to fall to the right side was counteracted by a plate with an inclined surface. Microscopical examination of the excised muscle showed that its fibers were separated by a large amount of cicatricial tissue and the fibers themselves were atrophied. The question of syphilis, after careful consideration, was rejected. The lesions appeared to be due to traumatism at the time of the extraction of the teeth and to the inflammation caused at that time, and after the exposure to the weather. Several similar cases have been reported, although usually anchylosis of the jaw is due to syphilis, or to myositis ossificans progressiva, or rheumatism.—*Medical News.*

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℞	Gelatin. pur.	2.0
	Sodii chloridi.	0.7
	Acidi carbol. cryst.,	0.1
	Eucain. hydrochlor. B.,	0.7
	Cocain. hydrochlor.,	0.3
	Aquæ destill.,	ad 100.fi

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The solution can be sterilized and kept for a long time without deteriorating. The technique of injection is the same as for Schleich's cocaine infiltration anesthesia. The special value claimed for this solution is the absence of a secondary vasomotor dilatation following the primary vasomotor contraction produced by the cocaine. Gelatine acts as the hamostatic.—*Dental Review.*

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